

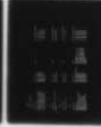
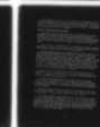
AD-A072 554

NATIONAL DEFENSE UNIV WASHINGTON DC RESEARCH DIRECTORATE F/G 13/2
CURRENT AND PROJECTED WATER RESOURCES PROBLEMS AND THEIR IMPACT--ETC(U)
MAY 79 R D SCHWARTZ

UNCLASSIFIED

NL

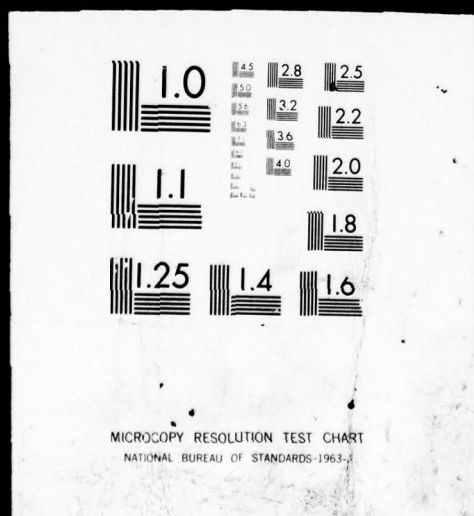
1 OF 4
AD
A072 554



REF ID

1 OF 4

AD
A072 554



current and projected **water resources problems** and their impact on **DOD installations**

National Defense University
Washington, DC 20319
May 1979

Research
Directorate

LEVEL 1

2

AD A 072554

DDC FILE COPY

DISTRIBUTION STATEMENT A
Approved for public release;
Distribution Unlimited

DDC
RECEIVED
AUG 10 1979
A

79 08 9 008

12 370p.

6 CURRENT AND PROJECTED WATER RESOURCES PROBLEMS
AND THEIR IMPACT ON DOD INSTALLATIONS

by

10
Lieutenant Colonel Ray D. Schwartz USAF
The Industrial College of the Armed Forces

Associate Research Fellow
Research Directorate

11 May 79

National Defense University
Research Directorate
Washington, DC 20319

DDC
RECEIVED
AUG 10 1979
A

DISTRIBUTION STATEMENT A
Approved for public release
Distribution Unlimited

✓ 470135
79 08 9 008

DM

DISCLAIMER

Opinions, conclusions, and recommendations expressed or implied within are solely those of the author, and do not necessarily represent the views of the National Defense University, the Department of Defense, or any other Government agency.

DISTRIBUTION STATEMENT:

CLEARED FOR PUBLIC RELEASE: DISTRIBUTION UNLIMITED

Accession For	NTIS G.A.M.I	
DDC TAB	Unannounced	
Justification		
By		
Distribution		
Availability Codes		
Dist	A	
Special		

TABLE OF CONTENTS

	Page
Foreword	vii
Preface.	ix
About the Author	x
SUMMARY.	1
CHAPTER	
I. INTRODUCTION	3
Hydrologic Framework	3
The Second National Water Assessment	5
Methodology.	5
II. WATER RESOURCES PROBLEMS--AN OVERVIEW.	9
Water Problems	9
Water-Related Land Problems.	14
Institutional Problems	15
Financial Problems	16
Summary.	16
III. THE DOD PERSPECTIVE.	19
Regional Analyses.	20
General Implications	31
IV. THE ARMY PERSPECTIVE	35
Regional Analyses.	35
General Implications	41
V. THE AIR FORCE PERSPECTIVE.	43
Regional Analyses.	43
General Implications	51
VI. THE NAVY AND MARINE PERSPECTIVES	53
Regional Analyses.	53
General Implications	57

VII. CONCLUSIONS AND RECOMMENDATIONS.	61
Impact on DOD Base Structure	61
The DOD Management Perspective	61
Base Closures and Mission Realignment.	62
A Flexible Water Conservation Policy	62
Budget Implications.	63
A Macro Approach to Water Supply	63
Agriculture/Energy Implications.	63
Possible Problems for Installation Managers.	64

APPENDIX

A. DOD INSTALLATIONS BY WATER REGION AND AGGREGATED SUBREGION	A-1
B. SYNOPTIC DESCRIPTIONS OF WATER RESOURCES PROBLEMS.	B-1
C. REGIONAL SPONSORS FOR THE SECOND NATIONAL WATER ASSESSMENT	C-1
D. SELECTED BIBLIOGRAPHY.	D-1

LIST OF TABLES

Table	Page
1. Army Installations by State	A-7
2. Air Force Installations by State	A-21
3. Navy and Marine Installations by State	A-45
4. DOD Installations by Region	A-61
5. Army Installations by Region	A-99
6. Air Force Installations by Region	A-111
7. Navy and Marine Installations by Region	A-131
Map: Water Resources Regions and Aggregated Subregions of the United States	4

FOREWORD

Within the broad context of US national resources, we rarely think of water as a strategic resource, but abundant water resources have played a major role in the achievement of US industrial, agricultural, and military strength. Threats to this basic resource--identified in the recently completed Second National Water Assessment--demand our attention and study.

Lieutenant Colonel Ray D. Schwartz analyzes these projected threats for their potential effect on the military base structure in the United States. Such problems respect no political or institutional boundaries, since the problems of the South Atlantic-Gulf region, for example, are the problems of Fort Benning as well. The author focuses his study on three levels: the Department of Defense, the military services, and the individual installations. He finds that most of our military installations are located in water resource regions with potentially serious water quantity and quality problems, and that, in certain of these regions, these installations not only share in but contribute to the regional problems.

The author provides recommendations to encourage Defense Department initiatives in a careful water resource management program. He identifies the challenge to the installation manager, to the individual service, and to the Defense decisionmaker, in terms of such issues as base structure realignment, costs, and alternatives. This report should be of practical use to military planners and facility engineering specialists at all levels, and is intended to stimulate additional study of this problem.



JOHN J. MCINTYRE
Director of Research
National Defense University

PREFACE

The efforts which went into this study were entirely made possible by the support and assistance of the Research Directorate of the National Defense University and by the United States Water Resources Council. A special note of appreciation is due to the Research Directors, Colonel Andrew J. Dougherty, USAF, recently retired, and current director, Captain John J. McIntyre, USN, and to the directorate staff for their outstanding administrative support.

The cooperation and assistance provided by Mr. Lewis D. Walker of the Water Resources Council reflect the cooperative spirit of the Second National Water Assessment. It will take this kind of spirit to enable us to resolve our water resources problems. A note of thanks is also due Mr. E. A. Rogner, Director of Installations Management and Planning of the Office of the Assistant Secretary of Defense (Manpower, Reserve Affairs, and Logistics) for his cooperation and assistance. And finally, special appreciation is due to J. D. Newell, National Defense University Management Systems Directorate, for all the computer programming to develop the print-outs in the accompanying tables of this study.

RAY D. SCHWARTZ

Fort Lesley J. McNair
Washington, D.C.

ABOUT THE AUTHOR

Lieutenant Colonel Ray D. Schwartz, USAF, researched and wrote this report while a student at the Industrial College of the Armed Forces and an Associate Research Fellow in the Research Directorate of the National Defense University. He received a BS degree in civil engineering from Drexel University in 1962, and an MA degree in public administration from the University of Maryland in 1975. He also attended the Air Command and Staff College in 1971 and is a 1976 graduate of the Air War College. Colonel Schwartz is a registered professional engineer in Pennsylvania and is a member of the American Society of Civil Engineers. Recent previous assignments include service as Director of Engineering, 12th Missile Warning Group, Thule Air Base in Greenland from 1976 to 1977; and Chief of the Environmental Policy Branch in the Directorate of Engineering and Services, Headquarters USAF, from 1975 to 1976. He has also served in various other command and staff positions at HQ USAF and at Air Force major command and installation levels. Colonel Schwartz' current assignment is Commander, 82d Civil Engineering Squadron, Williams Air Force Base, Arizona.

CURRENT AND PROJECTED WATER RESOURCES PROBLEMS
AND THEIR IMPACT ON DOD INSTALLATIONS

SUMMARY

ABSTRACT
The subject of water resources has recently been appearing more frequently in the press. Localized droughts tend to receive the most attention, but during 1978, information from the US Water Resources Council indicated a far more complex and critical water situation was developing. The ominous overtones of severe problems with water resources led to this National Defense University study to assess the anticipated impact of these problems on the military base structure in the United States.

Water and related land resources problems encompass many factors, including water quality and quantity, flooding, wetlands and shorelines, water rights and other institutional issues, and the financial difficulties entailed in making necessary corrections. Current and projected problems involving these factors were identified during the Second National Water Assessment conducted by the US Water Resources Council.

First, baseline data on water and related land resources were obtained from the Second National Water Assessment. Next, data applicable to the hydrologic area of each military installation in the primary base structure of the Army, Air Force, Navy, and Marine Corps were examined. Finally, an overall assessment was made for each military service and for the Department of Defense (DOD). Tables containing the information which pertains to each installation are included in the study for each military service and for the composite DOD to facilitate use at any level within the DOD. The study is designed to be both a planner's tool and a base for future and more detailed studies of specific hydrologic areas or military commands.

The study finds there are 1,114 military installations in the primary base structure within the 50 United States, and 1,022 (91.7 percent) of them are located in a hydrologic area having problems with water and related land resources. Installations in problem areas for each service are as follows: Navy and Marine--281 of 295 (95.3 percent); Army--260 of 280 (92.9 percent); and Air Force--481 of 539 (89.2 percent). The study also finds that two-thirds of the military installations are located within a Standard Metropolitan Statistical Area, a factor which potentially heightens the competition for available water resources. Another element of the projected competition identified in the study is the use of large amounts of water for energy alternatives to depletion of petroleum resources.

The study concludes that water resources problems will have an adverse impact on the DOD, primarily in the fiscal areas, and will lead to major changes in current methods of operation which use water resources. It also concludes that water resources will become a factor in decisions involving base realignments and mission changes, and in some areas may be the most significant determining factor in such decisions.

CHAPTER I

INTRODUCTION

The United States Congress in 1965 recognized that water was one of our most valuable national resources. Through the Water Resources Planning Act of 1965¹ Congress established the Water Resources Council, comprised of the Secretaries of Interior, Agriculture, Army, Commerce, Housing and Urban Development, and Transportation; the Administrator of the Environmental Protection Agency; and the Chairman of the Federal Power Commission. The Secretary of Energy has since been added to the Council. Advisory to the Council are the Attorney General, the Council on Environmental Quality, and the Office of Management and Budget. The act directed the council to maintain a continuous study of the adequacy of the Nation's water and related land resources to meet present and future requirements. Using a developed hydrologic framework, the council reported on its initial assessment in 1968 and has now completed the Second National Water Assessment.

The data developed in the process of conducting such a comprehensive, wide-ranging assessment are disturbing to contemplate. Based on a careful analysis of this data, perceptions emerge which paint a discouraging picture of the future sufficiency of water resources for the United States; also indicated are near-term problems in specific geographic regions which have heretofore escaped identification. The projections of that assessment--if borne out in time--have the potential to cause fundamental changes in the national economic, industrial, and commercial system, as well as a deterioration in the quality of life of the average American citizen. In light of these projections, this study was undertaken to examine the impact of the findings of the Second National Water Assessment on the military base structure of the United States.

This study, the first of its kind in the Department of Defense (DOD), provides a broad look at the water-related problems identified during the National Assessment, both in terms of the DOD and of each of the military services. The study is not meant to provide an in-depth analysis of water resource problems for each military base. What is provided is a macro-management assessment with sufficient supporting detail to open the door for further study at any military management level from Post Engineer to Office of the Secretary of Defense.

HYDROLOGIC FRAMEWORK

Following the establishment of the Water Resources Council, the United States was divided into 21 water resource regions, each of which constitutes a major river basin or a region with interconnected water-related characteristics. The contiguous United States contains 18 regions and Alaska, Hawaii, and the Caribbean each constitute one region. Each region is divided into aggregated subregions (ASR's) to further define hydrologic areas (Figure 1). There are 106 ASR's within the 21 regions (Appendix A).²

Each ASR is a fairly large geographic area and each is an aggregation of many smaller hydrologic regions. In many instances hydrologic boundaries are not the same as political boundaries. To facilitate definition and resolution, the boundaries of the hydrologic regions and ASR's have been modified by the Water Resources Council to coincide with state and county lines. In this configuration, they are referred to as "Water Resource Areas" and "Aggregated Subareas (ASA's)." However, for simplicity, only the terms "water resource region" and "aggregated subregion (ASR)" will be used throughout this study.

THE SECOND NATIONAL WATER ASSESSMENT

The Second National Water Assessment was developed in three major phases: Phase One was an analysis accomplished by the council's member agencies and reflects their views of current and future water-related requirements, problems, conflicts, and implications; Phase Two was a specific problem analysis accomplished by each of the 21 water resource regions and reflects state and regional viewpoints concerning existing and future water-related requirements, problems, conflicts, and needed resolutions; Phase Three was a comparison, evaluation, and merger of Phases One and Two, culminating in the final report.

The combined approach of using Federal, regional, state, and local inputs in developing the Second National Water Assessment is noteworthy not only because of its unique cooperative nature, but also because it provides increased depth in viewing the water-related problems of the United States. Consequently, the assessment attains a degree of credibility in its findings which cannot be easily refuted. The seriousness of the findings in the assessment and the degree to which the water resources of the United States have been abused clearly need to be brought to the attention of every citizen. Even more important is the need for solutions--through responsible decisionmaking and action by public officials at every level of government--including the DOD manager.

METHODOLOGY

Data from all three phases of the Second National Water Assessment were used for this study. Because of the broad general context of the Phase One (Federal) activity and the large land areas covered, the Phase Two (state and regional) activity provided the best information for examining the impact of water-related problems in those areas where military installations are located. All data concerning local water resource problems for the individual military installations in this study were taken from the technical memoranda for each region.³ The synoptic descriptions of specific problems (Appendix B of this study) were prepared by the Water Resources Council from the Phase Two activities.

The first step in evaluating the impact of the Second National Water Assessment on the DOD was to establish the criteria for installations to be included. This was necessary because military installations vary in land size from small navigational markers to large ranges and vary in population from zero to several thousand. After consultation with the real property offices in each of the services and with the Office of the Deputy Assistant

Secretary of Defense for Installations and Housing (ODASD(I&H)), a list of installations in the primary base structure of each military service was provided by the ODASD(I&H). These lists had been previously prepared by each of the services to identify its primary base structure for the Office of the Secretary of Defense.

Although a number of the installations are satellites of a larger installation, no attempt was made in this study to refine the primary base structure to differentiate major and small installations because of variations in geographical proximity. Therefore, each installation is considered to have equal weight in the statistics. A few installations in the lists have already been designated to be closed, but they were included in the study because they are still on the real property records and because of the potential for changes in their status in the future.

Each installation on the list was then geographically located to determine the water resource ASR in which it is located and to further determine if it is situated in a specific hydrologic problem area. All pertinent information was then entered into a computer databank for subsequent analysis. The variations by each of the services in maintaining its real property databanks added to the considerable number of manhours required to prepare the databank for this study; however, great care has been taken to ensure that all information as supplied, and as developed, is accurate.

Because many of today's social and economic problems are urban-oriented and because economies of scale provide solutions for some of these problems, those installations located in a Standard Metropolitan Statistical Area (SMSA) were also identified and the SMSA was entered in the databank.⁴ This information was not available in the individual services' databanks, but it warrants inclusion in their databanks together with other updating of data for geographical location, e.g., entries under "Nearest City."

After the databank was completed, the information was developed into the tables which are a part of this study. All tables may be found in Appendix A. Tables 1, 2, and 3 provide a list of installations alphabetically by state for each of the services (Table 1--Army; Table 2--Air Force; Table 3--Navy and Marine). These tables identify the installation's geographical location by political and hydrologic area and, include the water resource problem number. Table 4 provides an integrated list by hydrologic region and ASR of all DOD installations in the primary base structure.

Tables 5, 6, and 7 provide a list by hydrologic region and ASR of the Army, Air Force, and Navy and Marine installations, respectively, with hydrologic problem numbers and projections of annual requirements versus supply for the entire ASR in the years 1975, 1985, and 2000. These projections are valid only as indicators of water supply and demand for the entire ASR. Local conditions are not necessarily a reflection of the entire ASR, but the projections do provide an assessment of whether localized shortages could be met with water from another part of the ASR or if it would be necessary to transport water from another ASR or region.

The tables were designed for ready reference to determine any water resources problems which might be facing a particular installation. For example, to find out if Fort Bragg, North Carolina, is in an area with water resource problems, turn to Table 1 and locate Fort Bragg. Note the Region Number 3 and Problem Number A303, then turn to Appendix B and find Region 3, Problem A303 for a brief description of the problem.

Because this study is meant to also provide a baseline for future study and examination both at service and at installation level, data from the Second National Water Assessment have been used and referenced without modification to ensure easy entry into the Water Resources Council data. Terminology and problem identification from the regional inputs were also used for ease in further DOD evaluations and discussions of specific problem areas with officials from regional water agencies. Names and addresses of the sponsors for the regional inputs are provided in Appendix C.

With this introduction into the Second National Water Assessment and the methodology used to examine it in terms of the DOD military base structure, we are now ready to examine water resources problems and understand their potential effect on DOD installations.

CHAPTER I ENDNOTES

1. Public Law 89-90, US Code , Vol. 42, sec. 1962.
2. For readers who are familiar with the 1968 National Assessment, the ASR's are aggregations of the subregions which were used in that assessment. The 1968 subregions are not used in the Second National Water Assessment, but they have been identified for each installation in Tables 1, 2, and 3 (Appendix A) to facilitate any future comparative detailed studies which use the 1968 data.
3. Phase Two, Specific Problem Analysis, of the Second National Water Assessment was subdivided by the Water Resources Council into four technical memoranda provided from each region. These four memoranda were (1) to identify existing and future problems, (2) to provide state/regional future objectives and desires, (3) to provide specific problem analysis, and (4) to provide a summary report on the specific problem analyses.
4. A Standard Metropolitan Statistical Area (SMSA) can be briefly defined either as a city with 50,000 or more inhabitants or as a city with at least 25,000 inhabitants together with contiguous area with populations of at least 1,000 persons per square mile, having a combined population of 50,000. In the latter instance the county or counties in which the city and contiguous places are located must have a total population of at least 75,000. An SMSA constitutes, for general economic and social purposes, a single community.

CHAPTER II

WATER RESOURCES PROBLEMS--AN OVERVIEW

That water is essential to support all life forms is generally understood. The role water has played in the achievement of current American lifestyles is understood and appreciated to a much lesser extent, however. At each point in history when the utility of water was applied, major strides forward were achieved in all facets of life. Typhoid epidemics were virtually eliminated when water and sewage treatment were introduced¹ and energy produced from water was an important factor in the Industrial Revolution. In fact, water has been a key factor either directly or indirectly in the rapid development of modern society in general, and American society in particular.

In examining the role of water in the United States, the fact emerges that the United States' position in the world community has been made possible in large part by its water resources. Inexpensive hydropower from streams and rivers has contributed to the United States becoming the largest energy consumer in the world. Irrigation from ample groundwater has enhanced its stature as an agricultural giant. Navigable rivers and inland waterways have made possible the widespread locations of commerce and industry.

A number of factors determine the quantities of water used. These factors have been identified as population and earnings; domestic requirements; mining and energy production; manufacturing; food, fiber, and forest production; recreational activities; waterborne production residuals; and environmental enhancement and preservation requirements.² Each of these eight factors is self-explanatory with the possible exception of waterborne production residuals, which basically are those wastes--human, animal, and industrial--which have entered the streams and rivers.

From these eight factors emerge the patterns of current and projected water resource problems. In preparing the Second National Water Assessment, the Water Resources Council calculated each of these factors into a supply and demand picture. This same picture from another angle is described by the problems identified in the assessment. These problems are broadly categorized into water, related land (including flooding), institutional, and financial. In Appendixes A and B, the projected problems as they affect installations in the DOD base structure are discussed in terms of these categories. Therefore, a general discussion of the categories is in order before we proceed with the DOD and service perspectives.

WATER PROBLEMS

Water problems involve either quantity or quality. In terms of quantity, there is the problem of inadequate supply for offstream uses, i.e., energy production, agriculture, municipalities, and industry, all of which compete for available water resources.

The degree of competition by offstream users varies regionally. In some parts of the West, irrigation accounts for more than 90 percent of the offstream usage. The Appropriation Doctrine, which is the basic water law of the West, encourages excessive use of water in that the first in line is entitled to all of the water he says he needs. Failure to use all his water places him in the position of losing the right to his original appropriation. This doctrine recently came under severe attack by Federal agencies who pressed the Western States to improve a system which is counterproductive to water conservation. The strong opposition from the Western States in response to the perceived Federal intervention gives limited hope for any corrective action at either the state or Federal level because of the political sensitivity of the water rights issue.

Throughout the United States, competition to meet offstream usage for municipal water requirements is expected to increase. Continued urbanization will further intensify the needs for water in metropolitan areas. This means further urban problems for those metropolitan areas already experiencing water shortages, because of the backlash when daily activities of the citizens are affected. Residents in communities already experiencing problems have begun to pressure their local governments for restrictions on growth and for better management of existing facilities.

Another aspect of water quantity problems is an inadequate supply for instream uses. These are the uses for hydropower, recreation, fish and wildlife, and water transportation. The conflicts that occur between the instream uses are primarily hydropower versus transportation, recreation, and fish and wildlife. Low stream flows and hydropower impoundments result in insufficient flows to support fish, wildlife, and navigation. On the other hand, release of sufficient water from impoundments in order to maintain flow levels results in the loss of stored energy.

The thought of recreational uses competing for instream water may have a credibility problem in the face of other competing requirements which appear to warrant a higher priority, e.g., for economic growth. The validity of recreation's competition, however, stems from economics and increased leisure time. In many parts of the United States, recreation is a major economic factor; for example, Hawaii has a tourist-oriented economy and is experiencing water resource problems for some recreational areas. Also, especially in areas of high population density, the modern social phenomenon of increasing leisure time has intensified the demand for water resources for recreational purposes. Consequently, water requirements for recreation cannot be discounted.

Compounding the problems of adequate water supplies is the competition between offstream and instream water requirements. In the past, offstream uses had priority over instream uses because of the perceived economic benefits. More recently, environmental awareness and the need to meet increased demands for hydropower have rearranged priorities. Hydropower, particularly in Alaska and the New England States, is enjoying a resurgence of popularity.³

A problem of water supply quantity which warrants special identification concerns the use of groundwater. As previously mentioned,

agriculture in many parts of the United States is the largest competitor for offstream use. Similarly, agricultural use has caused a major problem with groundwater supplies. Much of the irrigation, particularly in the High Plains and Southwest, is provided from groundwater wells. A withdrawal of water which exceeds the recharging of the water table is called mining, and it has resulted in a drastic lowering of water tables by hundreds of feet in many areas, particularly where irrigation is practiced.

The problem of groundwater mining is also prevalent along all US coastal and inland saline water bodies. Groundwater mining in these areas has resulted in saltwater intrusion into the freshwater aquifers. In some coastal and inland areas, groundwater mining has also caused land subsidence. An example of this is Houston, Texas, where subsidence has occurred in a 3,000 square mile area, 12 feet deep at the maximum point. This subsidence is continuing at a rate of 6 inches per year.⁴

The groundwater mining problem has become so extensive and severe that in the Second National Water Assessment the Water Resources Council projections for 1985 and beyond assume that no groundwater mining will take place. The lowering of water tables and other adverse effects described previously are expected to make it too costly to mine water. Consistently in the state and regional assessments, the proposals for resolving conflicts for use of groundwater were to reduce the acreage of irrigated land. This is a disconcerting thought when viewed in terms of the projected population growth and the domestic, foreign, and economic implications of a probable reduction in agricultural output.

A hidden aspect of the increased competition for water resources is the quantity of water required for energy resource production. This requirement is emerging at the same time that groundwater mining is being curtailed. The Second National Water Assessment recognizes the competition of water for energy versus water for other uses to some degree, but not in terms of the magnitude of the permanent gap which is projected to occur between petroleum production and demand in the mid-1980's.⁵ Although this projected gap is no longer disputed, the oil companies have not stopped efforts to maintain petroleum production and they are investing in alternative hydrocarbon sources.

The production of these alternative hydrocarbon sources either requires large quantities of water or has potential ill effects for water resources. The petroleum industry is now using water in large quantities for enhanced recovery from oil fields. The secondary recovery method uses injected water to push the oil to the surface. About 25 percent of the oil pumped from wells in the United States during 1977 was obtained using this method. A newer method called tertiary recovery is used to loosen the oil from rock deposits. The method uses either steam or carbon dioxide, and a more recent technique uses water and detergent. Less than 3 percent of 1977 oil was obtained using tertiary recovery, but the method is being considered for wider use.⁶ Regardless of the recovery method, large quantities of water are required and will compete with other requirements.

One of the most controversial issues of water in conjunction with alternative hydrocarbons is the proposed use of water for transporting coal

by pipeline in a slurry form. Large quantities of water are required and a related problem occurs in cleaning the water for reuse. The particles in slurry waste water are so fine that an effective removal system has yet to be designed.

The coal liquifaction process also requires large quantities of water to make syncrude (synthetic fuel from coal). Estimates range from 175 gallons to 1,130 gallons of water to produce one barrel of syncrude, which gives some idea of the quantities of water required.⁷ This problem is compounded by the fact that about 50 percent of the total recoverable coal reserves and 30 percent of the surface-mineable reserves are in the Ohio and Upper Mississippi Regions, both of which have major water-demand requirements.⁸

The conversion of coal to syncrude requires more water than the process of deriving petroleum from oil shale, but oil shales have their own set of water problems. For example, the shale deposits in Colorado are an integral factor in groundwater flow and quality, and any disruption of these deposits could affect the flow of the White River and ultimately the Green and Colorado Rivers.⁹

The use of coal and uranium for generating electricity also places heavy demands on water resources for use as a cooling medium. A light-water nuclear reactor requires a considerably larger amount (39 to 50 percent) of water than does a coal or petroleum plant operating at the same output. The use of dry cooling or seawater for cooling obviates the demand for freshwater--but not without consequences. Dry cooling in coal-fired plants lowers the thermal efficiency, meaning that more coal is required and subsequently additional water is needed at the mining location both for mining and reclamation. The use of seawater for cooling obviously limits plant location.¹⁰

Biological conversion of organics is frequently mentioned as an alternative gaseous and liquid fuel production method. The potential as a method is undisputed, but proponents seldom mention the enormous quantities of water required for irrigation to maximize production. In a large scale operation the quantities required would in many cases exceed all the surface water available in the area. In fact, the only energy sources which appear not to be water intensive are solar and wind, and more definitive study needs to be done on the water requirements of these methods.

In addition to the technical aspects of the water and energy linkage which are described here, there are also socioeconomic impacts that could affect national security. These socioeconomic impacts need further study because of their implications.

The second facet of water problems is water quality. As mentioned in conjunction with groundwater quantity, the quality of groundwater is being affected by saline intrusions. This is but a small part of the problem. Deep well injections of toxic and hazardous wastes, subsurface percolation systems (e.g., septic tanks), seepage from landfills, and leaching (filtering down) of agricultural fertilizers and pesticides are all

contributors to groundwater quality problems. Contamination of surface water also results in degraded groundwater where withdrawals are large. Resolution of the problem is extremely difficult because groundwater aquifers cross political boundaries, making it virtually impossible to have coordinated control and management.

Groundwater, however, represents only one portion of the water quality problem. Based on currently available information, inadequate quality and quantity of potable water are problems throughout the United States, and water treatment is becoming a standard requirement even for family wells in rural areas. The problem may be worse because in many areas the water's contents are not actually known. This is of particular concern due to the increasing amounts of toxic materials found in water. Recent legislation requires drinking water to be monitored and compared to national standards. This will undoubtedly result in public pressure on local governments for enhanced water treatment as the actual water quality becomes known.

Because many water sources in the past were not monitored to detect all their contents, the question is sometimes asked, "Has the quality of water actually gotten worse or is it only a matter of higher standards?" The correct answer is generally "Both," but the fact remains that as science identifies potential dangers, a decision must be made either to take early corrective action or to take the health risk and accept the costs for additional health care later.

Another commonly occurring water quality problem is eutrophication (the aging and deterioration of bodies of water). Eutrophication results in water-surface scum, fish kills, odors, and decreased aesthetic values. This phenomenon is a natural event which occurs over long periods of time in lakes, ponds, and slow-moving waters, but it is accelerated by supplying nutrients to the aquatic plants which in turn results in a reduction of available oxygen. The common source of these nutrients is sewage treatment plant effluents and fertilizer residuals in water runoff from agricultural lands.

Other factors contributing to water quality problems are sedimentation, increased temperatures of surface waters, dense populations, and industry. Sedimentation is becoming a more serious problem due to increased runoff from urban, industrial, and highway construction. Sedimentation inhibits plant life and disrupts life forms which are sources of food for aquatic life. Waste heat discharged to air and water also can alter or destroy the aquatic balance as a consequence of the reduction in dissolved oxygen. As the water becomes warmer, it releases its dissolved oxygen to the atmosphere.

Dense population and industry have reduced water quality by discharging wastes directly into surface water bodies. Emphasis on the elimination of pollution sources in the past decade has improved this situation in some urban areas, but the problem is still widespread nationally.

Degradation of water quality results in increased costs to the consumer for any subsequent usage, regardless of whether the usage is for

recreational, domestic, or industrial purposes. Therefore, if the first user avoids treatment costs by discharging wastes directly into a stream, an annual cost avoidance can be measured and passed to the consumer as a lower price for the product. This is misleading, however, because the cost avoidance will become either an additional cost elsewhere for treatment of the degraded water in order to meet standards for consumer use, or a penalty of not being able to use the water for another purpose. Thus, following the maxims of the marketplace--there is no free waste disposal.

WATER-RELATED LAND PROBLEMS

Lands which either contribute to or are affected by water resources are also part of the total water resources equation. Flooding, degradation of bays and estuaries, degradation of offshore and shoreline habitats, use of wetlands, and dredging and filling are factors in this problem category.

Flooding has historically been a problem in many areas, causing economic losses both in agricultural and urban areas. The dichotomy is that flood plains have always been considered good agricultural lands and that waterways have always spawned and supported urban growth. The desirability of these lands for their economic use has pitted man against nature and despite numerous flood control projects, areas of the country still experience significant losses due to flooding. These losses currently average \$2.2 billion per year.¹¹

Closely related to the flooding problem is erosion. This problem particularly is troublesome for agricultural areas which annually lose tons of soil. The soil particles, upon entering a streamflow, create problems for municipal water-supply facilities, navigation systems, flood controls, and environmental systems. The scouring action of these particles in the water also erodes stream channels, banks, and shorelines, and as the particles drop out of the flow, the sedimentation degrades the quality of streams, lakes, and land.

To correct the sedimentation problem as it affects navigation and decreases the capacity of water-storage basins, dredging is necessary. In addition to the ecological disruption and additional sedimentation caused by dredging, disposal of the dredged materials becomes a problem. Where the dredged area is adjacent to a wetlands, the material if used as a fill material will adversely affect the wildlife and marine habitat with subsequent losses to the recreational and commercial industries. Also, filling wetlands with any type of materials in order to obtain additional building sites contributes to these problems.

Contributing to the wetlands problem is the degradation of bays and estuaries. Eutrophication, direct domestic and industrial waste discharges, agricultural chemicals carried by runoff, and decreased fresh water flowing into these surface waters alter their aquatic balances and degrade the wetlands areas. These changes to the ecological systems are detrimental to commercial and noncommercial enterprises in fishing and recreation.

In the Northeast, disposal of domestic and industrial wastes from the major metropolitan areas has caused a regional problem with shoreline and offshore activities. Sewage, oil, and debris are accumulating on the beaches. Additionally, many coastal areas are eroding, due mostly to natural causes, but disturbance of the sand dunes in some areas for construction sites has also been a contributor.

INSTITUTIONAL PROBLEMS

The institutional problems with water resources are primarily issues of water rights, uses of land, water conservation, policy and organization, water data, research activities, and public participation.

Of all the institutional problems, water rights are undoubtedly the most sensitive and inflammatory political issue. Water rights have been established by each state in the past without Federal intervention; however, in the eyes of the states the specter of Federal controls was raised in 1977 by the President's reduction of dams in the public-works package and also by options for water resources policy which were published in the Federal Register.¹² Leaders in the Western States objected strongly and the administration shortly thereafter pledged no Federal preemption of the states' water rights.¹³

A new heavyweight in the water-rights issue is American Indian water rights. The Supreme Court recognized Indian water rights early in this century and most Indian reservations were established long before major water-using activities were established. The United States is trustee of the water rights for the Indians and is now in litigation in Arizona, in the Missouri Basin, and in other Southwestern States to recover water which has been taken or appropriated from the Indians. The potential conflict here affects not only established cities, mining, energy production, and agriculture, but also their future activities.¹⁴

A subset of the water rights controversy is the authority to issue permits and to limit the types of activities on water-related land. This authority is an important element of many of the proposed solutions to water resource problems. The lack of authority exercised over these lands and controversy over whether the Federal Government should be involved provide the framework for this issue in water resources problems. Again, it is a sensitive political issue.

Another institutional problem is water conservation. Water conservation is viewed as one certain way to preclude water shortages, but American lifestyles have developed with the notion that water is always abundant. This notion is so strongly ingrained that it has only been effectively countered in localized areas where drought has occurred. Increases in service costs have not significantly changed people's habits and water-rights laws provide no incentive for reduction in consumption. Furthermore, the major initiatives required by state governments to legislate and impose water conservation are not politically palatable. It is, therefore, reasonable to anticipate that only through extreme problems of crisis proportion or through Federal funding incentives will significant progress be made to achieve water conservation.

Federal funding incentives and grants for other aspects of water resources have been substantial in past years, e.g., \$5.2 billion in 1972, \$9.1 billion in 1973, \$7.4 billion in 1974, \$9.1 billion in 1975, and \$10.2 billion in 1976. Unfortunately, the programs have been dispersed through 25 agencies and a total of 70 appropriation accounts.¹⁵ This fragmentation and the multiplicity of state and regional water jurisdictions provide the framework for problems of policy and organization. One view emanating from the Water Resources Council suggests that the planning focal point for management of water and land resources should be the local community. This would help to resolve the issue of insufficient public participation and to identify the public's needs and preferences.

The institutional problem of insufficient information hinders the definition of specific water problems. In many areas of the country, the magnitude of the local water resources problems is not yet known. This is clearly demonstrated in the example of a Midwestern town which, when drilling a municipal well, found the water 700 feet below the anticipated aquifer level. Similar information deficiencies exist throughout the entire United States water resources system. In addition to the need for improved data gathering, there is a need for additional research to facilitate understanding of water resources systems. The interrelationships of hydrological and biological systems are not yet fully understood, but decisions are being made daily which affect these systems. This can be a costly way to proceed.

The institutional problems described above are in many respects the most difficult of all the water resources problems. As with virtually all national problems, water resource problems require a national resolve, a national will, to come to grips with the issues. Political sidestepping of confrontations does not merely defer solutions, but more likely increases the potential for future outbursts. The institutional problems of water resources and energy are strikingly similar and they may represent a much greater problem which involves national resolve.

FINANCIAL PROBLEMS

Little needs to be said about the fourth category of water resource problems. As mentioned previously, the funds spent on problems involving water resources have been considerable, but solutions recommended by many of the completed studies cannot be undertaken because of the financial limitations. Based on past performance, it is reasonably safe to say that solutions to many of the problems involving water resources will be deferred until crisis proportions overcome governmental inertia and lethargy at all levels in the public and private sectors.

SUMMARY

As with all problems of national magnitude, there are no simple solutions and only hard decisions to be made and carried out. The types of problems described in this chapter are found repeatedly in the Second National Water Assessment. They do not appear as bureaucratic rhetoric, but as facts developed with inputs from the grassroots level, validated

through the public review process, and substantiated by the various levels of government. These are water resources problems which, to varying degrees, impact on daily affairs and on the American style of life. These are also problems which will inevitably impact on the management of military installations.

The following four chapters present the DOD and service perspectives on how current and projected problems will affect the military base structure. By necessity the descriptions of the problems are often redundant because installations are often collocated in a hydrologic area. The reader may, therefore, desire to focus on that chapter which is most closely associated with his perspective, using the other three only for broadening background material.

CHAPTER II ENDNOTES

1. Ernest W. Steel, Water Supply and Sewerage, 4th ed. (New York: McGraw-Hill Book Company, Inc., 1960), p. 5.
2. US Water Resources Council, Nationwide Analysis Summary, Preliminary Draft, April 1977, p. 1.
3. "The Modernization of a Small Hydro Plant," and "Small Hydro-Electric Units--Where to Find Them," Civil Engineering, September 1977, pp. 60, 87. Also, numerous articles about hydro plants have appeared in the Washington Post during 1977-1978.
4. Glenn W. Spencer, "The Fight to Keep Houston from Sinking," Civil Engineering, September 1977, p. 70.
5. US, President, Address to the Nation, "The Energy Problem," Weekly Compilation of Presidential Documents, Vol. 13, no. 17, 25 April 1977, p. 561. Also, see a study by William D. Wiard, 27 October 1977, Headquarters Air Force Systems Command, Andrews Air Force Base, Maryland, in which energy data from Federal agencies were integrated and the mid-1980's prediction was shown to be valid.
6. Thomas O'Toole, "Forecasters Don't See an Energy Crisis, Right? Wrong.," Washington Post, 15 January 1978, sec. G, p. 3.
7. William D. Wiard, Energy Section of the Systems Acquisition Strategy Study, Headquarters Air Force Systems Command, Andrews Air Force Base, Maryland, October 1977.
8. John Harte and Mohamed El-Gasseir, "Energy and Water," Science 199 (10 February 1978): 627. This is an excellent paper with quantitative comparisons of energy sources and water requirements.
9. Ibid., p. 628
10. Ibid., p. 628.
11. US Water Resources Council, Preliminary Water Resources Problem Statements, 1977 National Conference on Water, 23-25 May 1977, p. 26.
12. These can be found in the Federal Register, Vol. 42, No. 136, 15 July 1977, pp. 36788-36795 and Vol. 42, No. 142, 25 July 1977, pp. 37940-37961.
13. Peter J. Ognibene, "Western Water: Ignoring the Problem," Washington Post, 28 January 1978, sec. A, p. 17.
14. Margot Hornblower, "Fight for Water," Washington Post, 6 February 1978, sec. A, pp. 1, 10, 11.
15. Preliminary Water Resources Problems Statements, p. 46; Margot Hornblower, "Carter Tries to Stem Hill Flow of Largess into River Projects," Washington Post, 19 December 1977, sec. A, p. 4.

CHAPTER III

THE DOD PERSPECTIVE

The wide diversity of problems with water and related land resources as described in the preceding chapter illustrates the complexity of this national problem. Although there are similarities in the types of problems, a salinity problem in Florida requires a different solution than a salinity problem in Nevada. Consequently, there is a requirement for a myriad of solutions. Because hydrologic phenomena do not adhere to political boundaries, DOD installations will share the water resource problems of their neighbors.

Table 4 (of Appendix B) provides a capsulized look at the relationship of water resources problems and the DOD primary base structure. (Throughout the remaining chapters the term "installations" will be used to mean those installations in the primary base structure.) There are 1,114 military installations in the primary base structure within the 50 United States, and these installations are located in 90 of the 104 aggregated subregions (ASR's). Installations in the Caribbean (Region 21, with two ASR's, which includes Puerto Rico) are not included in this study. There are 1,022 (91.7 percent) of these installations located within defined water resource problem areas. Based on hydrologic principles, if an installation is located within a hydrologic area, it is virtually impossible for the installation to be isolated from the water resource problems in that area. Great care has been taken to correctly correlate specific problems with the installations. By noting the problem number for a specific installation in Table 4 of Appendix A and then referring to Appendix B, the reader will find a synoptic description of the problems in the area in which the installation is located. For example, Caswell Air Force Station is in an area of Region 1 where Problem A1 occurs. Referring to Appendix B, Region 1, find Problem 1 and the accompanying description. The prefix of each problem number denotes the category of the problem. Category A means the problem is severe and not yet under study for resolution. Category B means the problem is severe, but is at least under study or in some process of solution.

As a result of demographic trends, three-quarters of the US population is living in urban areas, and urban/suburban sprawl has effectively moved the cities closer to military installations. Two-thirds of the installations in the primary base structure are now located in Standard Metropolitan Statistical Areas (SMSA's). Of those installations in SMSA's, 93.8 percent are also in identified water resource problem areas.

Hardest hit by water resources problems is the Navy with 95.3 percent (281 of 295) of its primary base structure installations in problem areas. Although the Navy has installations in only 14 regions, the installations are primarily coastal and located near urban areas. The 14 installations which are not in identified problem areas are located only in Regions 17 and 18 (Washington, Oregon, and California).

The Army has 92.9 percent (260 of 280) of its installations in problem areas. Army installations are located in all 20 of the regions but more

than one-third are in Regions 2 and 3 (the Middle Atlantic and South Atlantic-Gulf Regions).

Least impacted on a percentage basis is the Air Force, but on an installation by installation basis, the Air Force has 481 of its 539 (89.2 percent) installations in defined water resource problem areas. These figures should be used cautiously because the Air Force has many more small facilities in its primary base structure than the Army and the Navy. These smaller facilities include leased family housing units and similar small functions which are not reflected in the structures of the other military services. However, the important point is that all the services have approximately 90 percent of their installations in defined water resource problem areas.

The variations in types of problems, and the number of installations involved lend themselves best to an assessment by region. The following paragraphs will briefly describe the regional problems in terms of their impact on DOD installations. Where "average year" and "dry year" projections are discussed, an average year means precipitation was based on a 30-year normal period in which a specific amount of precipitation was equaled or exceeded in 5 years of 10. A dry year was estimated to occur less than 20 times in 100 years and the specific amount of precipitation for a dry year was assumed to be equal or less than the amounts occurring in 8 years of 10.

Region 1--New England Region

The New England (Maine, Massachusetts, Rhode Island, Connecticut, Vermont, and New Hampshire) Region is generally considered to have an abundance of water due to high annual precipitation and numerous lakes and streams. The projection of annual requirements versus supply indicates an adequate supply during average years for each entire ASR; however, state and local inputs show localized shortfalls of water availability. Also, the dry year projections show deficiencies for each of the ASR's, and regardless of the type of year, problems with water quality are widespread.

These shortfalls are predominantly in the areas which have dense population and industrial growth, e.g., the Boston SMSA, but even some outlying areas such as Aroostook County, Maine (location of Loring Air Force Base) are also encountering quantity deficiencies for irrigation during summer low flow periods.

The situation in Region 1 is an environment for conflicts among development, agriculture, and recreation. None of the 64 installations (Army--9; Air Force--40; Navy--15) scattered throughout the area were specifically identified as creating or contributing to the problems, but all of the DOD installations are located within one of the localized problem areas.

Twenty-nine of the installations are in SMSA's, and each SMSA is located in a problem area. Because the Army is not heavily located in this region, impact on the Army should be minimal, but Natick's location in the

Boston SMSA could result in some future changes in the research and development activities conducted at the installation.

Region 2--Middle Atlantic Region

The Middle Atlantic Region contains 170 DOD installations (Army--59; Air Force--51; Navy--55; Marine--5). The region includes New Jersey, Delaware, Maryland, the District of Columbia, and parts of Vermont, New York, Pennsylvania, and Virginia. Each installation in the region is in a problem area and all problems in Region 2 are Category B (i.e., at least under study by some agency); however, lack of funding appears to be a constraint for much of the needed corrective action. The primary agency involved in the studies for this region is the Corps of Engineers (by direction of the Congress through Public Law 89-298, which was an act involving public works.)

As in Region 1, the projected annual requirements do not exceed supply for any aggregated subregion of Region 2 during an average year, but during a dry year supplies will be inadequate. Also, water supply problems will continue to occur in localized areas around the SMSA's of New York City and Washington, DC. Problems in these areas have already resulted in restrictions on usage during drought periods in the 1960's and water demands will continue to tax or exceed the capability of the existing water-supply systems.

Another urban area with anticipated shortfalls is the Norfolk and Virginia Beach area. Water problems in this area will impact hardest on Navy installations because of their large concentration in the area. Rapid growth in the area is requiring additional groundwater withdrawals which in turn will lead to saltwater intrusion. Other areas in the region have problems primarily identified with water quality, flooding, and decreased groundwater yields.

Throughout the Middle Atlantic Region, urbanization is expected to continue and further aggravate the existing water problems. Because 81 percent of the DOD installations in this region are located in SMSA's, the water problems of eastern cities will also be affecting the installations. If interbasin transfers become the solution to water supply shortages, it is reasonable to assume that those installations not already purchasing water from a municipal system will find it necessary to become involved in the interbasin transfer system. In any circumstance, ensuring an adequate supply of water will be a costly arrangement.

Region 3--South Atlantic-Gulf Region

The South Atlantic-Gulf Region encompasses South Carolina, Florida, major portions of Georgia, Alabama, North Carolina, and small parts of Virginia and Mississippi. There are 189 installations (Army--42; Air Force--75; Navy--62; Marine--10) from the primary base structure in this region and each one is located in an area with identified water problems. Sixty-two percent (117 installations) are located in SMSA's, which further intensifies the competition for water resources.

Primary problems identified in the region are shortfalls (current and projected) in quantity; heavy withdrawal of groundwater, which in turn is causing saltwater intrusion, and flooding accompanied by erosion and siltation. Coastal areas are particularly plagued with saltwater intrusion into the groundwater aquifers. Increased pumping to meet the demands of development and industrialization will hasten the saltwater intrusion which is expected to limit the growth potential in many areas.

Despite the fact that there are more military installations in this region than in any other, the state and local assessments identified only a few installations as key economic factors in the problem areas. The installations specifically identified were Fort Rucker, Eglin Air Force Base,¹ and National Guard Camp Shelby.² Also mentioned as a group were those installations located in ASR 306 (Forts Benning, McPherson, and Gillen; Dobbins Air Force Base; Air Force Plant No. 6; and others).³

The primary problem affecting Fort Rucker and Eglin Air Force Base concerns erosion and sedimentation; however, Camp Shelby and the other installations in ASR 306 are faced with many more problems, the most serious of which is a shortage during low surface flows and a limited amount of groundwater.

The fragile balance between saltwater and fresh groundwater in many areas, particularly along the Gulf Coast, will inhibit the drilling of additional wells to meet demands. One additional well on an installation could easily induce saltwater into the groundwater further inland, thus causing many other wells to become brackish and unusable with a possible result of millions of dollars in litigation against the Government.

Despite the varying problems facing the installations in Region 3, the projected data through the year 2000 indicates that in an average year, annual requirements for each of the ASR's can be met with the available supply, although intrabasin transfers may be required. In a dry year, however, the projected requirements exceed the supply throughout the region in all ASR's and by as much as 165 percent in ASR 305, which is in the southern tip of Florida.

Region 4--Great Lakes Basin Region

The Great Lakes Basin Region covers the State of Michigan and portions of New York, Pennsylvania, Ohio, Illinois, Indiana, Wisconsin, and Minnesota. It encompasses a highly industrialized area and contains 67 DOD installations (Army--17; Air Force--44; Navy--6), a number of which are industrial facilities such as arsenals, ammunition plants, and industrial plants. Forty-six of the installations are within SMSA's. No mention of military installations was made in the state and local assessments; however, each of the installations is located within an identified problem area with the exception of one small Air Force housing site in Waukesha County, Wisconsin.

The overriding water problem in this region is low quality stemming from industrial and municipal wastes. This impacts adversely on recreational facilities and adds significant costs to supplying water for

consumption and industrial use. Degradation of water quality is not limited to surface waters, but is also affecting groundwater supplies.

The projected requirements for each of the ASR's in an average year is within the available supply, except in ASR 403 in the year 2000 when requirements are projected to be 112 percent of supply. (ASR 403 includes the SMSA's of Milwaukee and Chicago.) The dry year projections indicate a water shortfall in each of the ASR's.

Region 5--Ohio River Basin Region

The Ohio River Basin Region includes parts of Pennsylvania, Ohio, Virginia, West Virginia, Kentucky, Indiana, Illinois, and Tennessee. There are 43 DOD installations (Army--14; Air Force--24; Navy--5) in the region and all are located within identified problem areas.

Much of the region is industrial, as in Region 4, and many of the DOD facilities are industrial/ordnance related. Probably because of their industrial nature, 32 of the installations are located within SMSA's, but none of the DOD installations in the region are specifically identified in the state and local assessments either as a key economic factor or as a contributor to a problem.

In addition to the specific area problems identified for each installation, there are three region-wide problems: mine drainage, non-point source pollution, and energy (Problems 19, 20, and 21). From these problems it is almost obvious that water quality is the predominant problem in this region. Most of the water degradation stems from municipal and industrial wastes and from acid mine drainage. There are several water supply problems identified, but the state and local assessments support the projection that water supply will adequately cover total requirements in each ASR for an average year. In a dry year, however, requirements will exceed supply in each ASR by a small percentage.

Region 6--Tennessee River Basin Region

The Tennessee River Basin Region is relatively small in area. It includes western North Carolina, a substantial portion of Tennessee, and minor portions of Mississippi, Alabama, and Georgia. There are only 11 DOD installations located in the region: three Army industrial/ammunition facilities, the Air Force Arnold Engineering Development Center, and seven other small Army or Air Force facilities.

Only five of the installations are located in specific problem areas, and with the exception of Holston Army Ammunition Plant, they are not the larger installations. Specific problems for the areas in which DOD installations are located primarily deal with water quality and flooding. There is no indication of any impact, economic or otherwise, by any of the installations except that in the Holston area, munitions are mentioned as a product of the local economy, a reference to the Holston Ammunition Plant.⁴

Although this region contains the Tennessee Valley Authority and water

would be expected to be in abundance, competition for hydropower, recreation, fish, and wildlife result in projections of requirements exceeding supply during dry years. During average years, however, requirements are projected to be within the available water resources for each ASR.

Region 7--Upper Mississippi River Basin Region

The Upper Mississippi River Basin covers an extensive area from northern Minnesota to central Illinois and portions of Wisconsin, Iowa, and Missouri. Although approximately one-quarter of the area has no specifically identified water problems, all of the 32 DOD installations except an Air Force ROTC housing site are located in hydrologic areas with specific problems. Again, a high percentage of the installations are located in SMSA's (23 of the 32 installations). There are no Navy or Marine installations, but 12 Army and 20 Air Force installations are located in the region. With the exception of a few industrial plants and several larger installations in Iowa and Missouri, the installations are relatively small. None of the installations was mentioned in the state and local assessments.

Problems facing the installations in this region are primarily quality (municipal and industrial wastes) related, although in some of the areas a shortage occurs during low flows. The projected annual requirements on an ASR basis during an average year can be met by supply, but in a dry year, annual requirements exceed supply in each ASR by approximately 25 percent.

Region 8--Lower Mississippi Region

The Lower Mississippi Region is relatively small in area and encompasses the areas along the Mississippi River from Missouri and Kentucky, through Arkansas, Tennessee, Mississippi, and Louisiana to the Gulf of Mexico. There are 24 DOD installations (Army--7; Air Force--13; Navy--4) in the region, about one-half of which are substantial in size, and 14 of which are located in SMSA's.

Only 16 of the 24 installations are located in the specific problem areas which vary in description by ASR as the Mississippi River courses to the Gulf. Local problems for the installations in ASR 801, the northern portion of the region, are inadequate water supplies for outdoor activities and pollution from industrial and agricultural chemicals. In ASR 802, the tri-state area of the Louisiana, Mississippi, and Arkansas boundaries, only National Guard Camp McCain is located in a specific problem area. This area is experiencing water contamination from agricultural pesticides in the surface waters and from pollution by industrial and municipal wastes.

The lower portion of the Mississippi River in Louisiana comprises ASR 803. The installations in this ASR are virtually all located in areas with specific problems. Some of these problems deal with navigational aspects of the river and therefore do not impact on the DOD installations; however, problems which could impact are water quality degradation due both to industrial and municipal waste discharge and to saltwater intrusion.

The projections for water requirements for the ASR's do not exceed supply for an average year; however, during a dry year the ASR requirements are projected to exceed supply by about 30 percent.

Region 9--Souris-Red-Rainy River Region

The Souris-Red-Rainy River Region is also relatively small geographically and covers the northern portions of North Dakota and Minnesota. There are 16 DOD installations (Army--7; Air Force--9) in the region and only two, Hector Field Air National Guard and Grand Forks Air Force Base are in SMSA's. The Army facilities are residual from the Safeguard system and the Air Force facilities include Minot and Grand Forks Air Force Bases plus other smaller sites. Twelve of the installations are located in areas with specific water problems identified.

The primary problems in the region are consistently identified as insufficient streamflows in late summer. The state and local assessment for Problem Area 4 states that "Current water supply sources from the Minot Aquifer and Souris River will be insufficient to meet Minot's projected water requirements including those of the US Air Force Base for municipal, industrial, and power generation uses."⁵ Other problems involve variations in degraded quality due either to minerals or to urban and industrial waste.

Despite the localized water supply problems, the projected annual requirements versus supply for the entire region (only ASR 901) indicate that during an average year adequate water should be available. This indicates flood containment or intrabasin transport may be required. In dry years the supply drops below requirements by as much as 22 percent by the year 2000.

Region 10--Missouri Basin Region

The Missouri Basin Region covers the largest area and encompasses Nebraska, most of Montana, North Dakota, South Dakota, Wyoming, Missouri, and portions of Iowa, Minnesota, and Colorado. Despite its large size, there are only 52 DOD installations (Army--14; Air Force--38) from the primary base structure located in the region. Twenty-nine of the installations are located in areas with specific water problems and 20 of these installations are located in SMSA's.

Only one installation, Rocky Mountain Arsenal, was specifically mentioned in the state and local assessment. This installation and local industries were identified as contaminating shallow wells and affecting a local water supply.⁶

The specific problem areas deal with quality degradation both instream and offstream, and groundwater levels which are dropping in rural areas due to irrigation. These water problems generally occur in the lower portion of the region where agriculture is predominant. In the SMSA's, water shortfalls are being experienced and projections indicate a further shortfall in the future.

The long-range projections for the ASR's show requirements being met by supply during an average year except in ASR's 1007, 1008, and 1010, which cover Nebraska and portions of Colorado and Wyoming. In a dry year, however, all the ASR's have shortages, primarily because of requirements for irrigation and instream navigation.

Region 11--Arkansas White Red Region

Region 11 is also a large area which includes Oklahoma, the Texas Panhandle, and portions of Colorado, Kansas, New Mexico, Missouri, Arkansas, Texas, and Louisiana. The region takes its name from the three main water courses in the region. There are 37 DOD installations (Army--10; Air Force--26; Navy--1) in the region, 24 of which are located in SMSA's.

Only 3 of the 37 installations are not within specifically identified problem areas. They are the Air Force Plant and Base at Wichita, Kansas, and the Army munitions plant in Labette County, Kansas.

The three installations in the Arkansas portion of the region are in areas with problems related to water quality. In comparison, the nine installations in the Colorado portion of the region are in areas with problems involving an insufficient quantity of water. For example, in 1975 the Colorado Springs SMSA, even with imports included, was short of water. Fort Carson and the Air Force Academy are within the SMSA and both are mentioned in the state and local assessment as heavy contributors to the economy.⁷ The projected increased requirements for this area will not be met by existing or planned actions.⁸ Other problems involve degraded quality of water from leaching due to irrigation.

There are only two installations in the Louisiana portion of the region. This area is confronted with water quality degradation due to pesticides, herbicides, other chemicals, sediment during low flows, and a lack of dependability of high flows.

Fifteen of the installations in the region are in the Oklahoma portion. These installations are in areas where water quality is below standards and the quantities are limited. Complicating the requirements are competing water needs for energy production and further development of energy resources.

The installations in the Texas portion of the region are faced with area-wide water problems. These problems are annual flooding and a state-wide difficulty of meeting EPA standards for potable water.

The region's projected requirements exceed supply during an average year in all ASR's except in ASR's 1104 and 1107. This deficiency affects 24 of the installations in the region. However, for a dry year, projected requirements exceed supply in all the ASR's, and by as much as 260 percent in ASR's 1103 and 1105. These ASR's include the Wichita and Oklahoma City SMSA's, and nine of the DOD installations including Tinker and Altus Air Force Bases, Navy Ammunition Depot McAlester, Air Force Plant 13, and McConnell and Vance Air Force Bases.

Region 12--Texas Gulf Region

The Texas Gulf Region includes all but the northern and extreme western parts of Texas and also includes several counties in Louisiana and New Mexico. There are 49 DOD installations (Army--7; Air Force--32; Navy--10) in the region, 35 of them located in SMSA's. With the exception of two installations in the New Mexico portion, the remaining 47 installations are located in Texas. All of the installations are located in identified water resource problem areas.

Although there are localized water problems in Texas, there are two common water problems throughout the state which have not yet been resolved. These problems are flooding and supply/quality for the rural communities. Another problem is common to the Gulf coastal counties where there is a lack of freshwater flow into the bays and estuaries.

Localized problems are mostly related to groundwater mining and the resultant effects, e.g., salinity intrusions and insufficient recharge. A commonly reported effect is land subsidence such as in the Houston-Fort Worth area. During the past 40 years, a 3,000-square-mile area centered on Houston has subsided and in the Pasadena-Deer Lake Park area, subsidence had dropped 8 to 9 feet by 1973 (dropping 6 inches per year at present).⁹

Projected water requirements for an average year through 1985 exceed supply only in two of the five ASR's; however, by the year 2000 ASR 1202 will also have a shortage of water. In a dry year, demand is projected to exceed supply in all ASR's, the worst case being ASR 1203, which is in the Texas High Plains and a source of most of the Texas agricultural output. Requirements in ASR 1203 exceed supply by 250 percent through the year 2000.

Region 13--Rio Grande Region

The Rio Grande Region includes the major portion of New Mexico, a few counties in southern Colorado, and the western edge of Texas. There are only 11 DOD installations (Army--3; Air Force--8) in the region, all of which are either in New Mexico (8 installations) or in western Texas (3 installations). All of the installations are in specific water problem areas and three are in SMSA's with water supply problems, i.e., Albuquerque and El Paso.

The water problems in the Texas portion of the region are basically the same as those found in the other water regions in Texas, i.e., flooding and lack of supply/quality for rural communities, plus localized problems with salinity and depletion of groundwater due to heavy irrigation requirements.

In New Mexico, the problems in the Rio Grande Basin involve the competition of agriculture (irrigation) with other uses, and the deficiencies in quantity of groundwater. As a result of increased use of available water, water quality for downstream users becomes degraded.

The water shortages in this region are projected to continue through

the year 2000, and will worsen during dry years. These continued shortages are expected to result in a reduction of irrigated land in future years.

Region 14--Upper Colorado Region

The Upper Colorado Region includes southwestern Wyoming, western Colorado, eastern Utah, and northwestern New Mexico. There is only one installation in the region, the Army's Green River Test Complex.

Local problems in the area of the installation are primarily water shortages. Water for irrigation is insufficient in most years, and the area is rich in energy resources which will cause further demands on the available water.

The projected water supply in the ASR is adequate for projected requirements during an average year, but in a dry year will be insufficient by a small percentage.

Region 15--Lower Colorado Region

The Lower Colorado Region consists of Arizona, western New Mexico, and two counties in southeastern Nevada. There are 27 DOD installations (Army--8; Air Force--17; Navy--1; Marine--1) scattered throughout the area, 15 of which are located within three SMSA's (Phoenix, Tucson, and Las Vegas). All 27 installations are within specific problem areas.

The Lower Colorado Region is faced with general problems of inadequate water supplies to meet the needs of entitlements (other states and Mexico) and a problem of increasing salinity in the water. Although the Central Arizona Project is expected to solve some problems by 1985 when it is completed, other demands on the Colorado River are expected to cause continuing shortfalls of water. Termination of irrigation is viewed as providing a means to meet some of the shortfalls.

The role of several DOD installations in the local economies facing specific water problems was mentioned in the state and local assessments. In ASR 1502, Nellis Air Force Base is mentioned as the largest employer in the state,¹⁰ and Yuma Proving Ground and the Yuma Marine Corps Air Station are mentioned as being located within the area, but they do not border the river.¹¹ In ASR 1503 the military earnings are identified as an economic factor for the Phoenix/Tucson areas,¹² but the earnings are definitely a smaller portion of the total earnings shown for the respective areas.

The projected water requirements exceed supply by 300 percent in ASR 1503 and by 240 percent in ASR 1502, both for the average year and the dry year; however, in ASR 1501 (Fort Huachuca/Willcox area) supply is projected to be adequate in an average year except in localized areas and during a dry year.

Region 16--Great Basin Region

The Great Basin Region includes virtually all of Nevada and the western half of Utah. There are 20 DOD installations (Army--5; Air Force--

9; Navy--6) scattered throughout two (1601, 1604) of the four ASR's in the region. Each of the installations is within a specific water resource problem area.

In the Utah portion of the region, 11 of the 12 installations are clustered in the Salt Lake City SMSA. Water problems in this area deal primarily with quality degradation due to population growth. The Federal Government is the largest employer in the Weber River area, which is a portion of the SMSA, with Hill Air Force Base, Defense Depot Ogden and a regional Internal Revenue Service Center.¹³ Additionally, in Tooele County (Tooele Army Depot) which is also in the SMSA, future growth will be limited unless either additional supplies are found or existing supplies are more efficiently used.

In the Nevada portion of the region, the installations are mostly ranges. The Navy Ammunition Depot in the Walker River Basin is a major landholder¹⁴ and it is within the same problem area as the city of Hawthorne which is experiencing shortfalls in water supply.

Despite localized problems with water supply and quality, the ASR's in which the installations are located are projected to have adequate supplies during an average year, although by the year 2000 and in dry years, projected requirements and supply will be about equal. An exception is ASR 1604 in Nevada which will experience extreme shortages during dry years.

Region 17--Pacific Northwest Region

The Pacific Northwest Region covers Washington, virtually all of Oregon and Idaho, and several western counties in Montana. There are 54 DOD installations (Army--6; Air Force--35; Navy--13) in the region; however, only 39 are located in areas with specifically identified problems. Seventeen of the 39 are within SMSA's, 11 of which are in the Seattle-Everett SMSA. None of the installations is mentioned in the state and local assessment.

Four problem areas are specifically described in the assessment: the Oregon coastal area where water supply is insufficient due to high demand in summers; the Puget Sound area where water rights are an issue; and the Snake River and Columbia River areas where the problems are conflicts in usage. These conflicts evolve from needs for hydroelectric generation and other instream uses.

The ASR projections show that total requirements do not exceed supply except in ASR's 1703 and 1705 during a dry year.

Region 18--California Region

The California Region includes the State of California and Klamath County, Oregon. This region has 149 DOD installations (Army--21; Air Force--59; Navy--62; Marine--7) and consequently is the location of 13.4 percent of the primary base structure.

The fast growth problems of population in California are commonly known, and these growth problems have had their impact on water resources.

Of the 149 installations, 125 are located in SMSA's, but only 114 of the 149 installations are in specifically identified water resource problem areas. Most of the problems are already under study, but there are three Category A problems remaining.

The severity of water demands has caused excessive groundwater overdrafts, which in turn resulted in state legislative action during 1977 to prohibit future groundwater mining. The San Joaquin Valley, a Category A problem area and home of Castle Air Force Base, has the largest overdraft problem in the state. Correction of the problem will reduce water flows and is expected to have negative impact on either agricultural output or fish and wildlife habitats.

In the Carmel River Basin, another Category A problem area, the largest concentration of military personnel in Monterey county is located on the peninsula. Twenty percent of the county population is military.¹⁵ Increased urban growth in the Basin has caused demands for water to exceed supply, and overdrafts of groundwater cause saltwater intrusion to be a potential problem.

Category B problems are also involved with overdrafts and salinity. Importation of water to provide a substantial portion of water for Southern California will be in competition with demands in the exporter basins, e.g., the Lower Colorado Region, and this is expected to adversely impact on agriculture in California.

Projected requirements versus supply in an average year show deficits in ASR's 1803 and 1807. This includes the areas around Bakersfield and Merced County. The dry year projections show shortages for all ASR's except ASR 1801, which includes extreme northern California and Klamath County, Oregon.

Region 19--Alaska Region

The Alaska Region is the State of Alaska as one ASR. There are 39 DOD installations (Army--13; Air Force--23; Navy--3) in the region and many of these are small, self-contained installations.

Contrary to the image of water associated with snow and ice, much of the region is faced with water shortages due to limited water supply facilities. The problem is compounded by groundwater degradation from either inadequate wastewater treatment or limitations posed by permafrost. Each of the installations is located within one of the specific problem areas.

Projected requirements indicate an adequate water supply for the state, but do not reflect the localized water shortages during average years. This is primarily because the localized nature of the specific problems is dwarfed by the total supply of water available in the state; however, in a dry year and as a hydrologic area, the region is projected to have a small shortage.

Region 20--Hawaii Region

The Hawaii Region encompasses the Hawaiian Islands, subdivided into four ASR's. Only three of the ASR's have DOD installations from the primary base structure with ASR 2003 (Oahu Island, which is also the Honolulu SMSA) containing 52 of the total 59 installations (Army--20; Air Force--10; Navy--27; Marine--2).

Although each installation is in a specifically defined problem area, the state and local assessment anticipates that adequate water to meet requirements will be available on all the islands through the year 2000. Localized problems, however, do exist. On Hawaii Island, surface water shortages limit military use at Army's Pohakuloa Training Area.

On Oahu Island water quality is identified as a problem, and in the Pearl Harbor area, saltwater intrusion is occurring due to drawdown in inland wells. Domestic use by military in the area exceeds the civilian sector on a per capita basis,¹⁶ and an institutional issue is joint use of military lands for water related recreational purposes. This stems from tourism which at present is the only potential major source of economic growth for the state.

Installations in the third ASR, Kauai Island, are in areas with water quality problems due to wastes and salinity. There are only five installations in this ASR.

Projected requirements versus supply support the local assessment and indicate no problem during average years; however, in dry years all ASR's are projected to have a shortfall in supply.

General Implications

Only 92 of 1,114 DOD installations in the 20 water resource regions are not in specifically identified water resource problem areas. Briefly recapping, they are located in Region 4--1 small housing site west of Milwaukee, Region 6--2 industrial facilities in northern Alabama, and Arnold Engineering Center and 3 small sites in Tennessee; Region 7--1 small housing site in southeastern Minnesota; Region 8--3 installations in central Arkansas and 5 in central and northern Louisiana; Region 10--23 installations scattered in Montana, western South Dakota, Wyoming, eastern Nebraska, western Iowa, northeastern Kansas, and northwestern Missouri; Region 11--3 in southeastern Kansas; Region 17--15 installations in western Montana, northern Idaho, and eastern Washington; and Region 15--35 installations scattered around California and southern Oregon. This does not mean that water resource problems do not exist in these areas of the country, but only that the local hydrologic area did not have a severe identified problem in the Second National Water Assessment.

On the other hand, the identified problems may be newly defined or long standing. In fact, some of the 1,022 installations in identified problem areas may have had the problems, e.g., flooding and sedimentation, since the base was acquired. The data must therefore be kept in perspective, and installations and areas must be examined before specific

or detailed policies are made. However, action should not be held in abeyance until after a third national assessment to see if the situation has changed.

In view of the total perspective, DOD planners and policymakers should include current and projected water resources in all decisions involving the primary base structure. Base closures and mission changes should not be made without consideration of water resource problems that would be compounded by a change in utilization of the military installation.

Although the courts have recognized that a sufficient quantity of unappropriated water is reserved for the purpose for which any Federal reservation is established, including military installations, the DOD is not assured of an uncontested supply. This stems from the fact that the amounts of water have not been quantified to establish what is sufficient. This has caused numerous cases of litigation to determine the rights of the parties contesting the use of available water.¹⁷ At the time of this study, water policies are being examined by the executive branch of the Government, in an attempt to resolve this problem and others; however, this action will not resolve the problems involving water quality, e.g., salinity and toxic materials. Problems involving these worsening conditions need also to be recognized in decisions on changes to the primary base structure.

Regardless of the outcome of decisions on availability of water for Federal installations, experience in recent years has shown that public pressure influences decisions which would adversely affect an area. It is entirely conceivable that in the next two decades a military installation in the Florida Gulf area would be prevented from drilling an additional well in order to preclude any possibility of upsetting the freshwater and saline water balance. It is also very likely that an installation which purchases its water from a local municipality would receive rationed quantities at the discretion of municipal officials if they perceived an indiscriminate use of water on-base while local citizens were being constrained in their water usage.

In terms of water quality, point and nonpoint source pollution from DOD installations has already come under fire through the National Environmental Protection Act. Therefore, no additional problems should be anticipated except where insufficient action has allowed a problem to continue unabated.

The greatest impact from the current and projected water resources problems will be to the DOD budget. The enhanced treatment required to compensate for increased salinity, toxic materials, sedimentation, and other degradation factors will further raise the cost of usable water. This additional cost will result in pressures from all levels for conservation, and in order to achieve effective monitoring of conservation measures, metering will no doubt be suggested.

Metering facilities on an installation, particularly for family housing, will also be expensive. But whether or not meters are installed, the cost of utilities, i.e., water, sewage, and electricity, will continue

to climb and consume a larger portion of the base operating and maintenance (O&M) budget. This will undoubtedly lead to pressures for charging housing occupants for utilities, either by metering or by pro rata cost sharing, and possibly to an increased furor over the perception of decreased military benefits.

Additionally, as a means of keeping down capital expenditures for plant improvement through the Military Construction Program, it is conceivable that purchasing water from local water authorities would be favored in lieu of modifying or building new treatment facilities. This would avoid siphoning off military construction monies needed for other facilities, but would place an increased burden on the Operations and Maintenance (O&M) budget. Also, with the burden for enhanced treatment placed on the local municipal authorities, the DOD could expect to be asked by local governmental officials to share the capital improvement costs. This has already occurred with waste treatment facilities.

In short, there appears to be no means of avoiding the cost impacts on defense budgets from solutions to the water resource problem. There is no way of estimating accurately what the costs will be, but they are likely to be in the billions.

CHAPTER III ENDNOTES

1. Southeast Basins Inter-agency Committee, 1975 National Water Assessment Activity Three, Technical Memorandum, South Atlantic-Gulf Water Resources Region, June 1977, p. 105.
2. Ibid., p. 120.
3. Ibid., p. 269.
4. Tennessee Valley Authority, Technical Memorandum 3 for Tennessee Regional Input to Water Resources Council's 1975 National Assessment of Water and Related Lands, August 1977, p. 15.
5. Upper Mississippi River Basin Commission, 1975 National Water Assessment, Specific Problem Analysis, Phase II, Technical Memorandum, Activity Three, Upper Mississippi and Souris-Red-Rainy Regions, Fort Snelling, Twin Cities, Minnesota, April 1977, p. 150.
6. Missouri River Basin Commission, "Present and Future Uses and Associated Problems and Issues," Technical Memorandum No. 2, 1975 National Water Assessment, August 1976, p. IV-21.
7. Arkansas-White-Red Basins Interagency Committee, Specific Problem Analysis 1975 National Assessment, Technical Memorandum, Activity 3, Phase II, Arkansas-White-Red Region, April 1977, p. 18.
8. Ibid., p. 19.
9. Glenn W. Spencer, "The Fight to Keep Houston from Sinking," Civil Engineering, September 1977, p. 70.
10. Lower Colorado Region Staff, '75 Water Assessment, Lower Colorado Region-15, Technical Memorandum No. 3, Specific Problem Analysis, April 1977, p. 109.
11. Ibid., p. 130.
12. Ibid., pp. 196, 216.
13. Utah Division of Water Resources, 1975 Water Assessment Great Basin Region Technical Memorandum No. 3, November 1976, p. 17.
14. Ibid., p. 59.
15. California Department of Water Resources, State of California 1975 National Assessment, Specific Problem Analysis, Technical Memorandum No. 3, April 1977, p. 116.
16. State of Hawaii, Department of Land and Natural Resources, Technical Memorandum, Activity 1, Phase II, Specific Problem Analysis for Hawaii Region, Problem Area No. IV, Water Issues 20 & 21, p. 1.
17. US, Federal Register, Vol. 42, no. 142, 25 July 1977, p. 37957.

CHAPTER IV

THE ARMY PERSPECTIVE

This chapter and the next two chapters will describe water resources problems from the perspective of each service.

The Army has 280 installations in the DOD primary base structure. Of these 280 installations, 260 are located in areas with specifically identified water resource problems. The information needed to identify the Army installations and their respective problem areas is provided in Tables 1 and 5 of Appendix A. A specific installation may be quickly found in Table 1, which lists the Army installations alphabetically by state and identifies the region and the problem areas in which the installation is located. Using the region number and the problem number from Table 1, an abbreviated description of the problem can then be found in Appendix B. Also, by using the installation's region and aggregated subregion (ASR) numbers, the installation can be found in Table 5 together with all other Army installations in the hydrologic area and having the same problems. Table 5 also provides a projection of annual water requirements versus supply for the entire ASR both for an average year and a dry year in the years 1985 and 2000. Thus, Tables 1 and 5 (Appendix A) and Appendix B provide an Army perspective in terms of the Second National Water Assessment.

As in the DOD perspective, each water region will be addressed in numerical order, with a brief description of the water resources problems affecting Army installations in the region. (To facilitate use by the separate services, geographic descriptions of the regions are again provided in this chapter.)

Region 1--New England Region

The New England Region includes Maine, Massachusetts, Rhode Island, Connecticut, Vermont, and New Hampshire. There are nine Army installations in three of the six aggregated subregions (ASR) in the New England Region. Five of these installations are in the Boston Standard Metropolitan Statistical Area (SMSA). The others are not in any SMSA. All nine installations are located in specifically identified problem areas. Those in the Boston SMSA, primarily the Army Natick facilities, are in an area faced with supply shortages described as critical and with water quality problems both in groundwater and coastal waters. Fort Devens is in an area where there are conflicting demands for the Merrimack River waters for limited potable groundwater. The Cold Regions Laboratory in New Hampshire is in a basin where despite increasing water demands, water is being diverted to the Boston Metropolitan Area. Water quality is a problem throughout the region due to waste and mineral pollutants.

Region 2--Middle Atlantic Region

The Middle Atlantic Region covers New Jersey, Delaware, Maryland, the District of Columbia, and parts of Vermont, New York, Pennsylvania, and

Virginia. The Army's largest concentration of installations in any region is in Region 2. There are 59 installations in the region, all of which are in Category B defined problem areas. (This means the problem is at least under study as a minimum level of problem resolution.) Throughout the region, water quality is a common problem. Degradation occurs from municipal and industrial wastewater, thermal discharges, agricultural chemicals, and urban storm runoff. There are also localized water shortages due both to urban demands and to seasonal shortages despite the overall ASR projections which indicate adequate water is available in the ASR during the year to meet the annual requirement. The high degree of urbanization in the region results in 49 of the 59 installations being located in SMSA's. Among the 49 installations are Forts Hamilton, Tilden, and Totten, Aberdeen Proving Ground, and the many installations in the Washington, DC, metropolitan area. Because of the urban character of the region, as demands increase and shortages are compounded, the Army's installations will also be forced to share those problems in common. Most of Region 2 is now under study by the Corps of Engineers in accordance with Public Law 89-298 (an Act involving Public Works) and solutions are being developed. As with all solutions to water resources problems, funding will undoubtedly pose a problem.

Region 3--South Atlantic-Gulf Region

Region 3 encompasses South Carolina, Florida, major portions of Georgia, Alabama, North Carolina, and small parts of Virginia and Mississippi. The South Atlantic-Gulf Region, with 42 installations, has the second largest number of Army installations, 22 of which are located in SMSA's. All of the installations are located in areas with specifically identified Category A water resource problems; however, some Category B problems are included in the Category A problems.

Throughout the region, groundwater depletions, saltwater intrusions, and low stream flows are prevalent problems. Major installations in areas with these problems are Fort Bragg, Fort Gordon, Fort Stewart, Camp Blanding, Fort Benning, Fort McPherson, and Fort McClellan. In the local and state assessment, reference was made to Fort Rucker and the installations in ASR 306 as key economic factors in the local areas, otherwise there was no mention of the installations.¹ Despite the localized shortfalls of groundwater, projections of annual requirements versus supply indicate an adequate supply. This will necessitate further flood control and impoundment to provide the water when it is needed.

Region 4--Great Lakes Basin Region

This region covers the State of Michigan and portions of New York, Pennsylvania, Ohio, Illinois, Indiana, Wisconsin, and Minnesota. The Great Lakes Basin Region has 17 Army installations, comprised mostly of arsenals and ammunition plants. All of the installations are located in areas with a specifically identified Category A problem and 13 are located in SMSA's. The problem areas in which the installations are located consistently identify water quality as a problem. This occurs both from point source and nonpoint source pollution. In the Chicago area and in the Cleveland-Akron area, requirements for water are overtaxing the groundwater supplies.

Projected average year annual requirements and supplies for the ASR's indicate an adequate amount of water, except for the Chicago area in the year 2000. Again, it is a matter of getting the water to the localized areas with shortfalls.

Region 5--Ohio River Basin Region

The Ohio River Basin encompasses parts of Pennsylvania, Ohio, Virginia, West Virginia, Kentucky, Indiana, Illinois, and Tennessee. Similar to the installations in Region 4, the Army has a number of ammunition plants and depot activities in Region 5. There are 14 installations in region, 8 of which are located in SMSA's. All of the installations are in specifically identified Category A problem areas. The problem areas are primarily experiencing water quality degradation due to municipal and industrial wastes, low stream flows, and some acid mine drainage.

Projection of annual requirements and supply indicate an adequate supply for each entire ASR in an average year, but shortages during dry years.

Region 6--Tennessee River Basin Region

Region 6 is a relatively small area. It includes western North Carolina, a substantial portion of Tennessee, and minor portions of Mississippi, Alabama, and Georgia. In the Tennessee River Basin Region, only three of the five Army installations are in problem areas. They are the Holston Army Ammunition Plant, NG Catoosa Rifle Range, and Volunteer Army Ammunition Plant. The problems in these areas are Category A and involve flooding and water quality. Redstone Arsenal and Phosphate Development Works are the two installations which are not in defined problem areas.

Projections of annual requirements and supply indicate a balance for an average year, but water for hydropower requirements of the Tennessee Valley Authority, fish and wildlife needs, and recreation combine in dry years to exceed the supply available.

Region 7--Upper Mississippi River Basin Region

Region 7 is quite extensive, extending from Northern Minnesota to central Illinois and including portions of Wisconsin, Iowa, and Missouri. There are 12 Army installations in Region 7, and each is in either a Category A or Category B problem area. The Army facilities are generally depots and ammunition plants, and 8 of the 12 are in SMSA's.

Surface water degradation from municipal and industrial wastes and insufficient supplies are problems in the areas where the installations are located. A related problem is groundwater pollution which also occurs with considerable frequency. The region's projected annual requirements and supplies indicate an adequate supply except in dry years.

Region 8--Lower Mississippi Region

The areas along the Mississippi from Missouri and Kentucky, through Arkansas, Tennessee, Mississippi, and Louisiana to the Gulf of Mexico constitute Region 8. In the Lower Mississippi Region there are seven Army installations, four of which are in problem areas. The three installations which are not in problem areas are Pine Bluff Arsenal, NG Camp Livingston, and Fort Polk. The other four, Milan Army Ammunition Plant, Memphis Defense Depot, NG Camp McCain, and New Orleans Army Base, are all in areas where water quality is a problem. Milan is also in an area where water shortages for outdoor activities have occurred. Based on the entire region, however, the projected annual requirements do not exceed supply except during dry years.

Region 9--Souris-Red-Rainy River Region

This region is relatively small in area and covers the northern portions of North Dakota and Minnesota. There are only seven Army installations in Region 9 and they are all residual from the Safeguard system. Five of the facilities are in areas with specific water problems. These problems involve degraded quality of groundwater and insufficient surface waters for municipal and recreational use. Projections of annual requirements for the entire region indicate an adequate supply for an average year, but shortages are projected during dry years.

Region 10--Missouri Basin Region

This region covers the largest geographical area. It includes Nebraska, most of Montana, North Dakota, South Dakota, Wyoming, Missouri, and portions of Iowa, Minnesota, and Colorado. There are 14 Army installations in the region, but only 8 of them are in specifically identified problem areas.

Rocky Mountain Arsenal, in conjunction with several local industries, was mentioned as contaminating shallow wells and affecting a local water supply.² The Arsenal and Fitzsimmons Medical Center are both in an area where additional municipal and industrial water supplies are required. Similar problems exist in the areas where the other six installations are located.

Forts Leonard Wood, Riley, and Leavenworth are not in specific problem areas, a situation shared by two National Guard facilities and an industrial plant. Despite this good fortune, Forts Riley and Leavenworth are in ASR 1010, as is Schilling Manor, an ASR which is projected to have water shortages even in average years and becoming critical during dry years. Seven of the installations in this region are in ASR's which have projected annual shortages of water during average years.

Region 11--Arkansas White Red Region

The Arkansas White Red Region is also a large area. It includes Oklahoma, the Texas Panhandle, and portions of Colorado, Kansas, New Mexico, Missouri, Arkansas, Texas, and Louisiana. There are 10 Army installations in the region and only the Kansas Army Ammunition Plant is not in a problem area. Water quality and quantity problems top the list

again, with Fort Carson, Pueblo Army Depot, and Fort Sill in the more critical areas because projections of annual requirements indicate substantial shortages even in average years. Fort Carson was mentioned as an economic factor in its local area,³ an area which includes the Colorado Springs SMSA and which has experienced shortages of water for several years.

Region 12--Texas Gulf Region

This region includes all but the northern and Rio Grande portion of Texas plus several counties in New Mexico and Louisiana. The Army has seven installations in this area, all of which are in problem areas.

Fort Hood is in an area where a 400-foot drop in the water table from groundwater mining caused a change to surface water use, but salinity problems with the surface water require that it be mixed with higher quality water in order to make it usable. The area in which Fort Walters is located will require additional interbasin water transfers to meet needs for an average year by the year 2000. Fort Sam Houston is in the San Antonio area where groundwater is projected to be adequate for future needs, but the overdrafting results in springs being dried up and in diminished freshwater flows into San Antonio Bay. Both Fort Walters and Fort Hood are in an ASR with projected severe shortages of annual water supply for requirements in average years and in dry years.

Region 13--Rio Grande Region

This region includes the major portion of New Mexico, a few counties in southern Colorado, and the western edge of Texas. There are only three installations located in the region: Fort Bliss, its ranges, and the White Sands Missile Range. The problems for the three areas are a lack of surface water and groundwater, high salinity in surface water, and saline incursions in aquifers. Projections for the ASR in which they are located are severe shortages on an annual basis, both in average and in dry years.

Region 14--Upper Colorado Region

This region includes parts of Wyoming, Colorado, Utah, and New Mexico, but there is only one Army installation in the region--the Green River Test Complex. Localized water shortages occur in the area and the energy resources in the area are expected to make further demands on the water.

Region 15--Lower Colorado Region

The Lower Colorado Region includes Arizona, western New Mexico, and two counties in southeastern Nevada. The Army has eight installations in the region, all of which are in specific problem areas. Water shortages and salinity are problems, and despite the Central Arizona Project, which is projected to solve some of the problems, projected annual requirements will continue to dwarf supplies. Fort Huachuca and its satellites are in these problem areas.

Region 16--Great Basin Region

Virtually all of Nevada and the western half of Utah constitute this region. The Army's Dugway Proving Grounds, Toole Army Depot, and NG Camp Williams are all in the Jordan River Area. Inadequate municipal supplies for projected growth are cited as part of the problems and limited growth is discussed. Defense Depot Ogden is in the Weber River Area where water-quality degradation and land use conflicts are cited as a problem. Federal employment in this area was cited as a major economic factor.⁴ Projections for annual requirements indicate that supplies will be adequate overall for the ASR.

Region 17--Pacific Northwest Region

The State of Washington, several western counties in Montana, and virtually all of Oregon and Idaho make up this region. Only four of the Army's six installations are located in specific problem areas and these problems are concerned with jurisdictional and use conflicts. Forts Lewis and Lawton are in these areas. Hydropower generation is a large consumer and competition is keen. There is little indication of any direct impact on the Army facilities in this region and the projections of annual requirements indicate an adequate water supply for the ASR's.

Region 18--California Region

Klamath County, Oregon, and the State of California form this region in which the Army is represented by 21 installations. Of the 21 installations, only Sierra Army Depot and Camp Roberts Annex are not in SMSA's. Groundwater overdrafts and low surface flows compounded by quality degradation are problems in the areas in which 13 of the installations are located. These 13 installations include Sacramento Army Depot, Riverbank Ammunition Depot, Oakland Army Base, the Presidios of San Francisco and Monterey, Fort Ord, and Lawndale Army Missile Plant. Interestingly enough, although Defense Depot Tracy and Sharpe Army Depot are not in specific problem areas, the projection for annual water requirements in ASR 1803 exceeds the supply during an average year. As might be expected from past experience, dry year projections indicate severe shortages.

Region 19--Alaska Region

The State of Alaska is its own region and is just one ASR. There are 13 Army installations in the region, all in specific problem areas where inadequate water supplies and inadequate waste disposal are among the key issues. The availability of water versus requirements projected on an annual basis and taken across the entire state indicates an adequate supply for the entire state, but intrabasin transfers would be required to curtail the localized shortages.

Region 20--Hawaii Region

Twenty Army installations are located in the Hawaii Region. Each installation is in a defined problem area. Use of Camp Pohakuloa, Hawaii Island, is reported in the local assessment to be limited by lack of surface water. On Oahu Island, a related issue is land use for military maneuvers which has resulted in erosion and damages. Because the entire

island of Oahu constitutes the SMSA of Honolulu, 18 installations are within the SMSA. Projections for annual requirements versus supply indicate adequate water during an average year, but some shortfalls are indicated during a dry year.

General Implications

The recurring theme in each water-resource region is insufficient quantity and decreasing quality. That translates into money--money for water treatment, wastewater treatment, and either inter- or intrabasin transfers to insure adequate supplies. With the exception of a few ASR's, there is adequate water available for the annual requirement. Unfortunately, there are seasonal variations and insufficient storage capacity to hold excess water from high flows for use as a supplement during low flows. Transportation from one hydrologic area to another as an alternate solution will take inordinate sums of money.

Because 93 percent of the Army's installations are in hydrologic areas with water resource problems, there is a need to further define the impacts at individual installations and determine courses of action to be taken. There is no apparent way to avoid involvement of the Army installations, and a major impact will be in the Operations and Maintenance Appropriations. Utilities will cost more to produce on post, and local municipalities will be recovering their capital expenditures through increased prices of the pipeline products. Other implications, such as metering in military family housing and charging occupants for utilities, are described in the DOD implications (Chapter III) and in Conclusions and Recommendations (Chapter VII). In summary, however, sharing a hydrologic area means sharing the hydrologic problems, and that has the implication of sharing in the cost of solutions.

CHAPTER IV ENDNOTES

1. Southeast Basins Interagency Committee, 1975 National Water Assessment Activity Three, Technical Memorandum, South Atlantic-Gulf Water Resources Region, June 1977, pp. 105, 120, 269.
2. Missouri River Basin Commission, "Present and Future Uses and Associated Problems and Issues," Technical Memorandum No. 2, 1975 National Water Assessment, August 1976, p. iv-21.
3. Arkansas-White-Red Basins Interagency Committee, Specific Problem Analysis 1975 National Assessment, Technical Memorandum, Activity 3, Phase II, Arkansas-White-Red Region, April 1977, p. 18.
4. Utah Division of Water Resources, 1975 Water Assessment Great Basin Region Technical Memorandum No. 3, November 1976, p. 17.

CHAPTER V

THE AIR FORCE PERSPECTIVE

As mentioned earlier in this study, the Air Force has included a large number of small installations in its primary base structure, and in some instances when dealing with the raw numbers the impact of water resource problems appears to be much greater than the impact on the other services. However, compared to the other services, the Air Force has the smallest percentage (89.2 percent) of its installations in problem areas.

The Air Force has 539 installations located in 19 of the 20 water regions, Region 14 being the exception, and 481 of these installations are located in specifically identified problem areas. Because these installations draw their water from the same hydrologic basin, the defined area problems can also be expected to impact on the installations. This impact may be either indirect, such as a damaged coastal recreational area which is not within the base confines, but is used by military personnel together with the general public, or direct, such as saltwater incursions into fresh groundwater aquifers. In the latter instance, although a base's population may be stable in the future, increased growth in the local area and additional water requirements may cause further saltwater intrusions and result in the military wells becoming unusable.

To identify those installations in specific problem areas and the nature of the problems, Tables 2 and 6 (Appendix A) should be used. A specific installation may be found in Table 2, which lists the Air Force installations alphabetically by state and identifies the problem area or areas in which the installation is located. An abbreviated description of the problem can then be found in Appendix B by using the region number and the problem number listed with the installation.

Table 6 lists the Air Force installations by hydrologic area. By noting the region number and aggregated subregion (ASR) number for any installation in Table 2, the installation can be found in Table 6 together with all other installations in the same area and having the same types of problems. Table 6 also provides a projection of the ratio of annual water requirements to supply for each entire ASR, both for an average year and a dry year in the years 1985 and 2000. Using Tables 2 and 6 and Appendix B, the following perspective of Air Force installations emerges. (Geographic descriptions of the regions are again included to facilitate use by the separate services.)

Region 1--New England Region

Maine, Massachusetts, Rhode Island, Connecticut, Vermont, and New Hampshire form the New England Region. The Air Force is heavily represented there with 40 installations, all of which are in water resources problem areas. Sixteen of the installations are in Standard Metropolitan Statistical Areas (SMSA's). Hanson, Otis, and Plants 28 and 29 are in the Boston SMSA where a problem exists with overtaxed water supplies.

The area in which Loring Air Force Base is located has an environmental controversy over the Dickey-Lincoln School Lakes Dam, and also is faced with pollution from municipal and industrial wastes, pesticides, and fertilizers. Competition for water during the spring months causes water shortfalls for irrigation.

The Lake Champlain Basin Area is the location of Plattsburgh Air Force Base and this area has numerous problems related to water quality degradation. Projections for annual requirements for the ASR's in Region 1 indicate adequate supplies during average years, but minor shortages during dry years.

Region 2--Middle Atlantic Region

This region includes all of New Jersey, Delaware, Maryland, the District of Columbia, and portions of Vermont, New York, Pennsylvania, and Virginia. All problems in this region are Category B, meaning they have been under study for correction. The Air Force, Army, and Navy are all heavily represented in this region. There are 51 Air Force installations, all of which are in a problem area. Forty of the installations are in SMSA's, which is a reflection of the urbanization which has taken place in the region. Consequently, water quality and water quantity problems are prevalent.

Despite localized shortfalls of water supply, each of the ASR's is projected to have adequate annual supplies during average years. This means that in a 12-month period the water is available somewhere and sometime in the ASR. The localized shortfalls occur because storage facilities are insufficient to provide the needed allocations. The Potomac River Basin is an example of this situation.

Region 3--South Atlantic-Gulf Region

The South Atlantic-Gulf Region includes South Carolina and Florida, major portions of Georgia, Alabama, North Carolina, and small portions of Virginia and Mississippi. This region also has large concentrations of military installations of all the services. The Air Force has 75 installations in the region. Each installation is in a Category A problem area, meaning the problem has not yet been studied for correction or solution. There are Category B issues in the region, but they have been involved in the Category A Problems. Urbanization has also had its effect in the region, and 47 of the installations are now located in SMSA's. Problems throughout the region center on depleting groundwater supplies, flooding, low surface flows, and saltwater intrusion along the coastal areas due to groundwater draw downs. Inter-basin transfers of water have been discussed in the region both as corrective measures and as problems already creating further competition. The projected annual requirements versus supply indicate adequate water in each of the ASR's during an average year except in ASR 305. In the year 2000, ASR 305 is projected to have an overall shortage. Homestead Air Force Base and the Avon Park facilities are located in this ASR. Dry year projections indicate shortfalls in all of the ASR's, the worst situation being in the Florida area.

Eglin Air Force Base was the only installation specifically monitored in the regional assessment as a key economic factor in the local area,¹ but the installations in ASR 306 were mentioned as a group which impacted on the economy.² Major Air Force facilities in this ASR are Dobbins Air Force Base and Plant 6. Problems in the area where Eglin is located involve erosion and sedimentation. In ASR 306, however, the problems are more severe and involve groundwater levels, water quality degradation, conflicts of water usage and control, and many other problems.

Region 4--Great Lakes Basin Region

The northern portions of New York, Pennsylvania, Ohio, Illinois, and Indiana, eastern Wisconsin, and Minnesota, plus the State of Michigan form the Great Lakes Basin.

The Air Force has 44 installations in the region, 28 of which are in SMSA's, and 43 of which are in water resource problem areas. The one exception is the Milwaukee Recruiting Family Housing Site.

The industrial nature of this region provides the source for many of its water-related problems. Quality degradation is prevalent throughout the region, both in surface water and in groundwater. This adds a significant cost factor to water supply and treatment both for municipal and industrial use. The projected annual requirements indicate adequate water is available within the ASR's during average years except in ASR 403 in the year 2000. ASR 403 includes the Chicago-Milwaukee area and the projection reflects the declining groundwater levels in both city areas. Dry year projections indicate annual shortfalls for all the ASR's except ASR 407, which includes the Niagara Falls area and which has seven small Air Force facilities including three plants.

Region 5--Ohio River Basin Region

Western Pennsylvania, the southern portions of Ohio, Indiana, Illinois, and parts of Virginia, West Virginia, Kentucky, and Tennessee are covered by the Ohio River Basin Region. Twenty of the 24 Air Force installations in this region are in SMSA's, and all 24 installations are within defined water resource problem areas. This region is also heavily industrialized and in addition to localized problem areas, there are three region-wide problems: mine drainage, non-point source pollution, and energy. The latter problem develops from energy generation by products (heat and consumptive requirements) and from insufficient tributary flows to support further energy development.

Wright-Patterson Air Force Base is in an area with problems due to water quality degradation and insufficient surface water for projected recreational needs; however, the total supply of available water is not in question. This is consistent with projections in all the ASR's in which Air Force installations are located. Supplies are projected as adequate for average years, but on an annual basis, minor shortages are projected in dry years.

Region 6--Tennessee River Basin Region

As a small area, this region covers minor portions of Mississippi, Alabama, Georgia, a sizeable portion of Tennessee, and western North Carolina. The Air Force has only six installations (five in SMSA's) in this region, the largest installation being the Arnold Engineering Development Center. Only two small facilities are in specific problem areas and projected annual requirements are about equal with supply for average years. In dry years a shortfall is projected due to competition for hydropower generation, recreational needs, and fish and wildlife requirements.

Region 7--Upper Mississippi River Basin River

Northern Minnesota to central Illinois, including parts of Wisconsin, Iowa, and Missouri constitute the area defined by the Upper Mississippi River Basin. Approximately three-quarters of the region has specifically identified problem areas, and all of the 20 Air Force installations are in these problem areas except the Minneapolis AFROTC Family Housing Site. Fifteen of the installations are located in SMSA's. Seven of these installations are in the St. Louis SMSA, including Scott Air Force Base. This problem area includes water quality degradation both in surface water and in shallow groundwater supplies on the east side of the River, which is the side where Scott is located.

Projections for annual requirements in the ASR's indicate adequate supplies during average years except in the St. Louis SMSA, which is projected to be borderline by the year 2000. Dry year projections show shortfalls in each of the ASR's.

Region 8--Lower Mississippi Region

This region covers the course of the Mississippi from Missouri and Kentucky through Arkansas, Tennessee, Mississippi, and Louisiana to the Gulf of Mexico. In this region, the Air Force has 13 installations, 7 of which are in SMSA's. Seven of the 13 installations in the region are in water resource problem areas, including Blytheville Air Force Base (in an area with flooding problems). The small installations in the New Orleans SMSA are in an area which has a water quality degradation problem. The quality degradation stems both from insufficient river flow to prevent salt water intrusion in the river below New Orleans and also from municipal and industrial waste discharges into the river. The six installations not in specific problem areas include England Air Force Base. Annual projections for water requirements exceed supplies only in dry years in each of the ASR's.

Region 9--Souris-Red-Rainy Region

This relatively small region covers the northern portion of North Dakota and Minnesota and is one ASR. There are nine Air Force installations in this region. The largest ones are Minot and Grand Forks Air Force Bases. Only two of the installations, Finley Air Force Station and its housing annex, are not in specific problem areas.

Water problems in the region are primarily insufficient streamflows in

late summer. More specifically, however, in the Souris River Main Stream where Minot Air Force Base is located, the state and local assessment indicated a projected water shortage for the needs of Minot ". . . including those of the US Air Force Base . . ."3 Also in the Red Lake River Basin and Red River Main Stream Area, where Grand Forks Air Force Base is located, seasonal competition for existing supplies and local high consumption demands compound problems caused by inadequate wastewater treatment. Flooding is also a problem in this area.

Despite the localized problems, the region's annual requirements are projected to be within the available supply during an average year, but this will entail additional storage and control of the floodwaters. During dry years, however, shortages are projected to occur.

Region 10--Missouri Basin Region

This is the largest geographical area, encompassing Nebraska, most of Montana, North Dakota, Wyoming, Missouri, and portions of Iowa, Minnesota, and Colorado. There are 38 Air Force installations in this region, 16 of which are located in SMSA's. Only 21 of the installations are in specific problem areas, but they include Malmstrom Air Force Base, Buckley ANG Base, Lowry Air Force Base, Offutt Air Force Base, and Richards Gebaur Air Force Base.

The problem in the area where Malmstrom is located evolves from water quality degradation. Buckley ANG Base and Lowry Air Force Base are in an area where additional water is needed for municipal and industrial use, and Offutt Air Force Base is in an area where water-based recreation is deficient, water quality degradation occurs from storm water runoff, and severe urban flooding occurs. The Kansas City SMSA, where Richard Gebaur AFB is located, has problems with municipal water supply shortages and water quality degradation.

On the other side of the ledger, Glasgow Air Force Base, Ellsworth Air Force Base, Francis E. Warren Air Force Base, Forbes Field ANG, and Whitman Air Force Base are not in hydrologic areas with specifically identified water resources problems.

Projected annual requirements in the ASR's for an average year exceed supply in varying degrees except in ASR 1002 and 1011. Malmstrom, Richard Gebaur, and Whiteman are in these ASR's. Based on the projections, the Denver area is the most severely impacted ASR. Dry year projections indicate shortages in all the ASR's.

Region 11--Arkansas White Red Region

Region 11 is also a relatively large geographical area which includes Oklahoma, the Texas Panhandle, and parts of Colorado, Kansas, New Mexico, Missouri, Arkansas, Texas, and Louisiana. The Air Force presence in this region is mostly in Colorado and Oklahoma. There are 26 installations, 16 of which are in SMSA's, and 24 of the installations are located in specific problem areas. Air Force Plant 13 and McConnell Air Force Base are the two installations not in a problem area.

The NORAD Combat Operations Center, Peterson Air Force Base, and the Air Force Academy are located in a problem area where the water shortages in the SMSA's are severe during low runoff periods and droughts. The Air Force Academy was mentioned in the state and local assessment as a heavy contributor to the economy,⁴ but no other comments concerning Air Force installations were made.

Barksdale Air Force Base is the only installation in the Louisiana portion of the region. It is in the Red River Area, which has a problem with flow quantities. During low flows the high salinity, pesticides, herbicides, dissolved solids, and sediment make the water unsuitable for irrigation and public supply, and high flows are not considered dependable occurrences.

Sheppard Air Force Base is the only installation in the Texas portion of the region. There are no local specific problems identified, but the general problems of flooding and both water supply availability and quality are applicable throughout all of Texas. Similarly in Arkansas, Little Rock Air Force Base is in an area where water supplies are short and there is a lack of data on available water resources.

In Oklahoma, Vance Air Force Base is in an area where groundwater shortages impact on crude oil secondary recovery. Tinker Air Force Base is in an area where water quality degradation occurs, and the area where Altus is located has problems with competition for the available water supplies and with water quality.

The projected annual requirements exceed supply considerably during average years except in ASR 1104 (Little Rock Air Force Base) and ASR 1107 (Barksdale Air Force Base), but during dry years the requirements in all the ASR's exceed supply from 160 to 250 percent.

Region 12--Texas Gulf Region

All of Texas but the northern border, plus a few counties in Louisiana and New Mexico, constitute Region 12. The Air Force has 32 installations in the region, 2 of which are in New Mexico (Cannon Air Force Base and Melrose Air Force Range). All of the installations are in defined problem areas, and 23 of them are in SMSA's.

Cannon Air Force Base is in an area having problems with groundwater mining and high concentrations of natural chemicals in several domestic groundwater supplies.

Texas has general problems involving water quality for rural communities, flooding, and inadequate fresh water flows to its coastal bays and estuaries. In the High Plains area, groundwater depletion from the Ogallala Formation is having a negative economic impact and the situation is not expected to improve. Reese and Webb Air Force Bases are in this problem area. In the Dallas-Fort Worth area, problems include groundwater mining and severe pollution from chemicals and bacteria in the metropolitan area of the Trinity River.

The Houston-Galveston Area has problems with groundwater mining, saltwater intrusions, water quality degradation, and land subsidence. Ellington Air Force Base is in this area.

In the San Antonio area, the Edwards Aquifer is estimated to be capable of providing water for the future, but drawdown of the aquifer is causing declines in the area springs and is reducing freshwater flows into San Antonio Bay.

Projections for annual requirements in an average year indicate an adequate supply except in the High Plains area (ASR's 1203 and 1204). Dry year conditions are projected to cause shortages in all of the ASR's.

Region 13--Rio Grande Region

This region encompasses the Rio Grande River and includes the western boundary of Texas, a major portion of New Mexico, and a few counties in southern Colorado. There are only eight Air Force installations in this region, six in New Mexico, and two in Texas. Only Plant 83 and Kirtland Air Force Base are in a SMSA (Albuquerque). The New Mexico area has water shortages and quality degradation of the available water; and the Texas area has problems with flooding and the rural water supply both in quantity and quality.

Projections for annual requirements exceed supply by wide margins both in average years and in dry years. Kirtland, Holloman, and Laughlin Air Force Bases are in these ASR's.

Region 14--Upper Colorado Region

There are no Air Force installations in this region, which includes portions of Wyoming, Colorado, Utah, and New Mexico.

Region 15--Lower Colorado Region

The Air Force has 17 installations in this region, which covers Arizona, western New Mexico, and two counties in southeastern Nevada. Twelve of the installations are in SMSA's.

There is a general problem of inadequate water supply in this region, and there are numerous problems related to salinity. Projections for annual requirements exceed supply by 300 percent in ASR's 1502 and 1503, both in average and in dry years. Nellis, Davis-Monthan, Luke, and Williams Air Force Bases and Plant 44 are in these ASR's. Nellis Air Force Base is described in the regional assessment as the largest employer in the state of Nevada,⁵ and military earnings in the Phoenix/Tucson area are mentioned as economic factors, but as shown in the assessment, they are definitely smaller portions of total earnings in the area.⁶

Region 16--Great Basin Region

Virtually all of Nevada and the western half of Utah comprise the Great Basin Region. The Air Force has nine installations in this region:

six are in the Salt Lake City-Ogden SMSA, one in the Reno SMSA, and two are not in a SMSA. All installations are in defined problem areas.

Those installations in Utah are in areas where water quality degradation and localized surface water shortfalls are problems. The two facilities in Nevada (Hawthorne Radar Bomb Scoring Site and Reno International Airport) are both in areas with water supply inadequacies.

Projections for annual requirements indicate adequate supplies in Utah except in dry years, but in Nevada the annual requirements exceed supply both in average and in dry years.

Region 17--Pacific Northwest Region

The Pacific Northwest Region covers Washington, virtually all of Oregon and Idaho, and several western counties in Montana. The Air Force has 35 installations in this region, 20 of which are in SMSA's. Twenty-four of the installations are in specific problem areas.

The Puget Sound Area in Washington has a major problem of jurisdictional rights. Similarly, the Snake River Area and the Columbia River Area in Idaho and in Oregon have conflicts in usage and management. Hydropower generation is a large factor in these conflicts.

Projections of annual requirements indicate adequate supplies both in average and dry years except in the Snake and Columbia Rivers during dry years.

Region 18--California Region

The State of California and Klamath County, Oregon constitute the geographical coverage of this region. The Air Force has 59 installations in the region, 43 of which are in specific problem areas. The population growth in California has urbanized many of the coastal counties, and consequently 44 of the installations are located in SMSA's.

The primary problems in this region are overdrafts of groundwater. The largest overdraft problem in the state occurs in ASR 1803, where Castle Air Force Base is located. Projections for annual requirements nearly approximate supplies during an average year except in the northern part of the state where supplies are adequate, even in dry years. Dry years for the remainder of the region show projected shortages.

Region 19--Alaska Region

The State of Alaska is Region 19 and is one ASR. There are 23 Air Force installations in the region, three in the Anchorage SMSA. All 23 installations are in specific problem areas which mostly involve localized water shortages and inadequate wastewater treatment resulting in water quality degradation.

Projections of annual requirements indicate adequate supply, but as in numerous other ASR's, this is misleading because, although water is

available in the entire ASR, localized shorgages will not be corrected without some means of transporting or storing water which is excess to requirements in another area.

Region 20--Hawaii Region

The Air Force has only 10 installations in this region and all are in specific problem areas. Nine of the installations are on Oahu Island and one is on Kauai Island. Problems cover a wide range of factors, but quality degradation and groundwater drawdowns are among the most serious.

Projections for annual requirements indicate an adequate supply in the ASR's, but during dry years some shortages will occur.

General Implications

The Air Force primary base structure is heavily represented in areas with water resources problems, and it cannot escape the implication of budget impacts. By having a much larger number of installations (539 compared to Army's 280 and Navy's 295), the increased cost for water supply and waste treatment can be expected to have a significant effect on the Operations and Maintenance (O&M) budget. Utilities taking an increased share of the already limited O&M budget will probably lead to more stringent conservation actions and to pressures for metering and charging housing occupants for utilities. Daily operations will also be subjected to rigorous examinations similar to those for energy conservation.

Other implications are described at the end of Chapter III and in Chapter VII. To avoid repetition they will not be given here, but it is quite evident that methods of managing water resoures in the Air Force are due for change.

CHAPTER V ENDNOTES

1. South Basins Inter-agency Committee, 1975 National Water Assessment Activity Three, Technical Memorandum, South Atlantic-Gulf Water Resources Region, June 1977, p. 105.
2. Ibid., p. 269.
3. Upper Mississippi River Basin Commission, 1975 National Water Assessment, Specific Problem Analysis, Phase II, Technical Memorandum, Activity Three, Upper Mississippi and Souris-Red-Rainy Regions, Fort Snelling, Twin Cities, Minnesota, April 1977, p. 150.
4. Arkansas-White-Red Basins Interagency Committee, Specific Problem Analysis 1975 National Assessment, Technical Memorandum, Activity 3, Phase II, Arkansas-White-Red Region, April 1977, p. 18.
5. Lower Colorado Region Staff, '75 Water Assessment, Lower Colorado Region-15, Technical Memorandum No. 3, Specific Problem Analysis, April 1977, p. 109.
6. Ibid., pp. 196, 216.

CHAPTER VI

THE NAVY AND MARINE PERSPECTIVE

Navy and Marine installations tend to be located in the coastal areas of the Nation, and consequently, are located in only 14 of the 20 water-resources regions of the 50 United States. There are 270 installations in the Navy's primary base structure and 25 installations in the Marine primary base structure. In this study, the Marine installations have been included with the Navy installations because they are in the real property records of the Navy, but each Marine installation is specifically identified if it appeared in the study data from the Second National Water Assessment.

The combined Navy and Marine primary base structure of 295 installations is listed in Table 3 of Appendix A. The installations are listed alphabetically by state together with information on their hydrologic location and problem areas. There are 281 installations in a specifically identified problem area, or 95.3 percent of the primary base structure. A contributing factor to this large percentage is the fact that satellites and portions of complexes, e.g., Long Beach Naval Complex, San Diego Naval Complex, and Pearl Harbor Naval Complex, are identified as individual installations. Although this has an effect of increasing the total number of installations, the percentages and impact would not be lessened simply because a naval complex in a hydrologic area generally has its components in the same hydrologic area.

To identify those installations in specific problem areas and the character of the problems, Tables 3 and 7 (Appendix A) and Appendix B should be used. A specific installation may be found in Table 3. Noting the corresponding region number and problem number and then turning to Appendix B, an abbreviated description of the problem can be found.

Table 7 lists the installations by hydrologic area. Using the region number and aggregated subregion (ASR) number from Table 3, all other installations in the same area and those having the same problem area can be identified. Table 7 also provides a projection of the ratio of annual water requirements versus supply for an entire ASR, both for an average year and a dry year in the years 1985 and 2000. (These projections must be used cautiously because they are for the entire ASR, which means that although adequate water supplies may be indicated, the water may not be immediately available in the area where it is required.) Using Tables 3 and 7, and Appendix B, the following perspective of Navy and Marine installations emerges. (The geographic descriptions of the regions have been repeated in the chapter facilitate use by the separate services.)

Region 1--New England Region

The New England Region is comprised of Maine, Massachusetts, Rhode Island, Connecticut, Vermont, and New Hampshire. There are 15 Navy installations in the region, 7 of which are in Standard Metropolitan Statistical Areas (SMSA's). All of the Navy installations are located in specifically identified problem areas. Water quality degradation is a primary problem throughout the areas; and in the Narragansett Bay Area,

Rhode Island, surface and groundwater are scarce in localized areas, resulting in saltwater intrusions into groundwater aquifers.

Projections of annual requirements for the ASR's indicate adequate supplies during average years, but minor shortfalls during dry years.

Region 2--Middle Atlantic Region

Region 2 includes the States of Delaware, New Jersey, Maryland, the District of Columbia, and parts of Vermont, New York, Pennsylvania, and Virginia. The Navy is heavily represented in this region where all problem areas are Category B (in some stage of study or planning). The Navy has 55 installations within the region and the Marines have 5. All of the installations are in specific problem areas and 49 (Navy-44, Marine-5) of the installations are in SMSA's.

Water resource problems throughout the region involve localized and seasonal shortages and water quality degradation. Twenty-two of the installations are in the Lower Potomac River Basin where water demands exceed summer flows of the river. Fifteen of the installations are in the James River Basin below the confluence with Chickahominy River. These installations are in the Newport News and Norfolk areas where water demands are expected to exceed safe yield levels and groundwater depletions are creating conditions for saltwater intrusions. The Newport News Daily Press on 2 April 1978, carried a 16-page supplement which dealt entirely with water and related issues in the area.¹

Projections for annual requirements in the ASR's do not reflect the seasonal shortages, but indicate that adequate supplies are available for average years. Dry year projections indicate shortages in all the ASR's.

Region 3--South Atlantic-Gulf Region

The areas of South Carolina, Florida, and portions of Georgia, Alabama, North Carolina, Virginia, and Mississippi are encompassed by Region 3. The Navy is also heavily represented by 62 installations in this region, plus 10 Marine installations. All of the installations are in specific problem areas (Category A problems with some Category B problems included in them).

The problems in Region 3 involve heavy groundwater withdrawals and saltwater incursions, flooding with erosion and siltation, and localized water supply shortages. Areas in which the Marine installations are located in North Carolina are experiencing a lowering of the groundwater table and associated shortages of supply. Groundwater shortages are also occurring in the Charleston, South Carolina area, and pollution is adversely affecting the coastal areas.

In the Jacksonville, Florida area, there are problems with saltwater encroachment in the groundwater supplies. Also in Florida, the Pensacola and Panama City installations are in an area where erosion and its effects are causing problems. Those installations around Mobile, Alabama, are in an area with shortages of surface water and degraded groundwater.

Projections for annual requirements in average years indicate that adequate water is available within the ASR's except in the southern tip of Florida where demands are projected to exceed supplies by the year 2000. Key West Naval Air Station and Hospital are in this area. Dry year projections indicate shortages in all of the ASR's.

Region 4--Great Lakes Basin Region

As described by the region's name, the area around the Great Lakes is included in this basin. There are only six Navy installations in the region and four of them are in the Chicago SMSA, which has problems with water quality degradation and with groundwater withdrawals exceeding recharge capability. The other two installations, the Finance Center, Ohio and the Underwater Systems Center in New York, are in areas where water quality is a primary problem.

Projections for the ASR in which Chicago and the Great Lakes Training Center are located indicate shortages in average years by the year 2000, and shortages in all dry years. Projections for the other two ASR's indicate shortages only during dry years.

Region 5--Ohio River Basin Region

There are five Navy industrial-type facilities in this region where water quality degradation is a major problem. Projections for annual requirements indicate that the ASR's in which the installations are located have adequate water supplies except during dry years.

Region 6--Tennessee River Region and Region 7--Upper Mississippi River Basin Region

There are no Navy or Marine installations in these regions.

Region 8--Lower Mississippi Region

This region, which includes the boundary areas of the Mississippi River from Missouri and Kentucky to the Gulf, has only four Navy installations. Two are at Memphis, Tennessee, where water quality and inadequate water supply for outdoor use are problems. The other two are in the New Orleans area where serious water quality problems are occurring and the river flow below New Orleans is insufficient to preclude saltwater intrusions.

Projections for the ASR's indicate adequate water to meet annual requirements except during dry years.

Region 9--Souris-Red-Rainy River Region and Region 10--Missouri Basin Region

There are no Navy or Marine installations in these region.

Region 11--Arkansas White Red Region

There is only one Navy installation in the region, the McAlester Ammunition Depot in Oklahoma. Water quality and flooding are problems in this area and projections indicate water supply shortfalls for average and dry years.

Region 12--Texas Gulf Region

This region includes virtually all of Texas and small parts of Louisiana and New Mexico. The Navy has 10 installations in the region, all of which are in Texas. There are three general problems with water resources in Texas which are concerned primarily with rural supplies of water, flooding, and freshwater flows into coastal areas. All of the installations are in the problem areas.

More specific problem areas also occur throughout the region. The Dallas Naval Air Station is in an area with projected shortages by the year 2000. Also, the Corpus Christi area has inadequate water supplies due to insufficient storage capacity and groundwater mining. Projections for the ASR in which Corpus Christi is located indicate that annual requirements can be met during average years, but that shortages will occur during dry years.

Region 13--Rio Grande Region and Region 14--Upper Colorado Region

There are no Navy or Marine installations in these regions.

Region 15--Lower Colorado Region

Marine Corps Air Station Yuma and the Navy Electronics Laboratory in Arizona are the two installations in this region. Water quality from pollutants and salinity are general problems in this region and insufficient water supplies are problems in the areas where the installations are located.

The projections for the ASR's reflect these shortages both in average and in dry years.

Region 16--Great Basin Region

The Great Basin Region includes Nevada and the western half of Utah. The Navy has six installations in this region, five of which are associated with Air Station Fallon and the other is the Hawthorne Ammunition Depot. The ammunition depot is identified in the local assessment as a major landholder in the area.² Problems with inadequate water supplies occur in these areas and the projected annual requirements for the ASR exceed supplies both in average and in dry years.

Region 17--Pacific Northwest Region

Washington, Oregon, Idaho, and western Montana comprise this region, which has 13 Navy installations. Two of the installations are in the Seattle-Everett SMSA. Only the Pacific Beach Naval Facility and the Bonner Ship Research and Development Center are not in a specifically identified

problem area. Coos Head Naval Facility is in an area where summer demands exceed supplies, and the other installations are in the Puget Sound area where a problem exists with conflicts over jurisdiction of water use.

Projected requirements within the ASR's indicate adequate water is available during average years and dry years, except possibly in ASR 1705 during dry years.

Region 18--California Region

California and Klamath County, Oregon, comprise the California Region. Seven Marine installations and 62 Navy installations are in this region. Six of the Marine installations and 56 of the Navy installations are located in SMSA's.

Primary problems in the region are groundwater overdrafts, salinity, and water degradation. Only 12 of the 69 installations are not in areas with specific water resource problems.

Projections for the ASR's indicate some relief in shortages of water supplies to meet demands during average years by the year 2000, but dry year projections indicate shortfalls except in Northern California.

Region 19--Alaska Region

The State of Alaska comprises the Alaska Region. The three Navy installations in the region are in areas where localized water shortages occur and lack of wastewater treatment compounds the problem. This is a general condition in Alaska, although the projected annual requirements for the state as a whole appear to be covered by adequate supplies.

Region 20--Hawaii Region

There are 27 Navy installations and 2 Marine installations in the Hawaii Region. All but four of the installations are in the Honolulu SMSA and all of the installations are in specific problem areas.

Adequate water supplies in the ASR's are projected for the requirements but there are localized shortages. In the Pearl Harbor area, saltwater intrusion is occurring due to groundwater drawdown by inland wells, and per capita consumption in the military housing area was also noted to exceed offbase per capita consumption.³ Other problems in the Pearl Harbor area are pollution and an identified conflict of military and civilian use for water-related recreation.

General Implications

The 281 Navy and Marine installations which are in hydrologic areas with specifically defined problems will undoubtedly experience the same budget impacts on facility operation and maintenance as expected for the sister services. Location near urban areas tends to compound an installation's water supply problem. As corrective measures are taken in the urban areas, the costs will be passed to the consumer, which in numerous instances includes the military installation.

On-base water supplies will also become more expensive to treat and groundwater mining (overdrafts) will cause further saltwater encroachment. This problem has greater potential impact on the Navy because of its coastal locations. A saline/freshwater balance which is disturbed by an additional well can be expected to cause extensive litigation.

Actions to resolve these problems will be costly. The increased costs of utilities can be expected eventually to lead to pressures for metering and perhaps reimbursement by housing occupants. These implications and others are further described in Chapters III and VII.

CHAPTER VI ENDNOTES

1. The Newport News, Virginia Daily Press carried a 16-page Sunday supplement on 2 April 1978 devoted entirely to water resources and devoid of paid advertisements. A section (p. W11) covered actions and comments from military officials in the Newport News area. The article generally cited the favorable record of the military in water use, but it also pointed out that the largest single consumer was in homes and barracks on the bases, with free utilities and no meters.
2. Utah Division of Water Resources, 1975 Water Assessment Great Basin Region Technical Memorandum No. 3, November 1976, p. 59.
3. State of Hawaii, Department of Land and Natural Resources, Technical Memorandum, Activity 1, Phase II, Specific Problem Analysis for Hawaii Region, Problem Area No. IV, Water Issues 20 & 21, p. 1.

CHAPTER VII

CONCLUSIONS AND RECOMMENDATIONS

In the interest of brevity, the major conclusions and recommendations to be drawn from this study are condensed in the following paragraphs.

Conclusion: A Water resources crisis is developing. Information provided for the Second National Water Assessment by the water regions, states, and local authorities clearly indicates there are both current and future problems. Although there is a need for more and improved data on water resources, the information available is sufficient to document the problem areas.

Impact on DOD Base Structure

Conclusion: Most of the DOD primary base structure will be affected by water resource problems. Of 1,114 installations in the primary base structure in the 50 United States, 1,022 (91.7 percent) are located in specifically defined problem area. Based on the percentage of installations in problem areas, the order of magnitude by services is Navy/Marine--95.3 percent; Army--92.9 percent; and Air Force--89.2 percent. Two-thirds of the DOD installations in the primary base structure are in a Standard Metropolitan Statistical Area and 94 percent of these installations are in specifically defined problem areas.

Recommendation: As stated in the introduction, this study is meant only to provide a macro view of the extent of the DOD-related water resources problems and serve as a foundation for further study. Therefore, further studies and analyses of the impact of water resources problems on the DOD base structure are required to provide a basis for necessary policy decisions.

The DOD Management Perspective

Conclusion: The major impact of water resource problems on the DOD base structure will be increased costs and reduced use of water. Corrective actions to solve water resources problems will drive costs for usable water into ranges heretofore unimagined. Water purchased by DOD installations will reflect the cost increases and the installation-produced water will also be at higher rates in order to achieve treatment standards and to acquire water. Despite past litigation to ensure unrestrained use of water on Federal installations, reduced use of water will either (1) be mandated at the Federal level as with the other Federal programs, e.g., energy, solid waste, and pollution sources; or (2) induced at installation level by public pressure from local communities faced with water resource shortages; or (3) both mandated and induced.

Reduced use of water will necessitate revision to many standard operating procedures. Aircraft washracks, armor cleaning facilities, lawn irrigation, clean vehicle standards, and dock and harbor uses are among those procedures which will be affected, not only in terms of the freshwater used, but also in terms of wastewater disposal. Although

reducing the amount of water consumed can not be relied on to reduce costs, significantly, if the raw water is of a quality that only a minimum amount of treatment is necessary to make the water useable, this will assist in holding down costs. Likewise, wastewater treatment, to meet new standards, will cause increased disposal costs, but a decrease in water usage would result in a decrease in wastewater. This provides an additional impetus for water conservation.

Recommendation: The DOD should take action to reduce water consumption at all its installations and publish the results at large in the local community to indicate an awareness of the water resources problems. This does not advocate a DOD unilateral approach to solve a national problem. It does advocate a self-starter program that demonstrates DOD awareness of a national problem and an endeavor to take positive action before a less acceptable program is forced on the services.

Base Closures and Mission Realignment

Conclusion: A factor in future base closures and mission realignments will be the competition for available water resources in the hydrologic area where the bases are located. Water resources may be the one factor which would overcome political considerations in a base closure action. Also the efficacy of locating an additional unit or mission in an area with projected water resources problems would be questionable at best, not only because of potential water shortages, but also because of the requirement for defense dollars to meet the additional requirements for water.

Recommendation: Include water resources data in all future decisions involving changes to the primary base structure. Use data from the water resources regions as supporting documentation for decisions if water resources play a significant part in the decisionmaking process. An interesting digression here is that in the state and regional assessments, there is a lack of identification of military installations as major economic factors in the specific problem areas. This leads to the thought that total population increases, increases in urban populations, a more mobile society, and 66 percent of the installations in an SMSA may mean that base closures are not really the local economic devastator they are held up to be.¹

A Flexible Water Conservation Policy

Conclusion: Conservation of water resources is a primary method for alleviating this resource problem, but the present lack of incentives to conserve has not had any major effect. The Second National Water Assessment may be the catalyst to provide incentives. Conservation, however, means more than repair of leaky faucets. It includes capital sums for repair and replacement of old, deteriorated, and leaking public water distribution systems, revised methods of irrigation, new codes for plumbing, new types of plumbing fixtures, and installation of meters to encourage and enforce conservation measures.

Recommendation: Develop a DOD water resources conservation policy which is broad enough to allow installation officials to establish their

own objectives and goals within the context of water resources problems in their hydrologic area. Mandating an arbitrary consumption reduction does not allow base officials the management flexibility needed to adjust to local situations. Any installation which has recently been subjected to water shortages will already have gone through a belt-tightening process and an imposed fixed reduction in consumption would penalize them for having an enhanced conservation program.

Budget Implications

Conclusion: Budget procedures will require modification in order to provide clear visibility of the additional support costs for utilities (including wastewater treatment and similar costs) and to avoid presenting a total budget for the DOD which is predominantly for support costs at the expense of weapons systems.

Recommendation: Modify budget procedures to ensure that the O&M budget provides the visibility for utility costs at least during the next two decades. Personnel costs have taken their toll on the total defense budget, and utility costs are now making major inroads. This has a negative impact on DOD ability to fund major weapon systems.

A Macro Approach to Water Supply

Conclusion: Water shortages on any installation should be solved with professional hydrologic consideration of water resource problems within that specific hydrologic area. Individual attempts at drilling additional wells could easily upset a saline/freshwater balance and contaminate local wells. Also, if the local populace perceives that conservation of water resources is not being practiced on an installation, any attempt to acquire additional water will quickly generate an adverse public reaction.

Recommendation: All future actions to acquire additional water should be taken in concert with local and regional water authorities. Although this cooperative effort is not required by law, and Federal installations are not subject to the permit requirements of the states, the DOD image needs to be a favorable one in each local community.

Local opposition to an installation developing additional water supplies in an area with limited water resources could have adverse consequences.

Agriculture/Energy Implications

Conclusion: Competition for water will result in a reduction of the acreage in irrigation by the end of the century. This will decrease agricultural output, which has always been a strength of the United States, and result in a period of economic and social adjustment.

Conclusion: Beginning in the mid-1980's projected water resources problems will be further compounded by alternatives to the decreased availability of petroleum. Proponents of energy/petroleum alternatives discuss their methods with an apparent lack of understanding of water

requirements and competition for water resources. There is little indication that the state and local inputs to the Second National Water Assessment anticipated the major water demands which are now contemplated by energy proponents for production of petroleum and petroleum substitutes.

Recommendations: DOD joint planning should address the ramifications of the projected petroleum and water shortages. The projections for these shortages are founded on good source data for long-range planning. Also, both resources are quantifiable to the extent that we can anticipate at least some of the problems which shortages of these resources will produce. With the changes that seem destined to occur in our economy and lifestyles, the magnitude of the implications that these problems will have on national security necessitates their inclusion into defense planning.

Possible Problems for Installation Managers

Conclusion: If DOD conservation policies are perceived to be ineffective, pressures will be imposed to require meters in family housing units and other facilities where reimbursement could be obtained. When utility costs begin to consume too large a percentage of the Operation and Maintenance (O&M) Budget, pressures will mount to require the passing of costs to the military family housing occupants and nonappropriated fund activities.

Recommendation: Each of the services should assure that educational programs and courses for installation commanders and their installation engineers include an instructional block covering both the nature of, and the national policy on, current and projected water problems. Similarly, all commander's conferences should incorporate a small segment covering the service or command policy as it relates to these problems. Military leaders should be conversant with the subject of water resources to the extent that they can engage in credible dialogues with their counterparts in local communities. There is unlimited potential for favorable or negative coverage by the news media of energy and water issues. Local communities are being educated on the water problems² facing them and the Second National Water Assessment will provide further impetus for local media to report on the local assessment. Therefore, installation officials should be prepared to act judiciously when resolving an installation water problem which has a potential to compound water problems for the entire area, e.g., wells and groundwater withdrawals where saline incursions are a problem.

Based on actions in the 1970's, competition for water resources by the end of this century can be expected to precipitate large-scale problems in virtually all areas of life in the United States. Continued inaction toward corrective measures will allow the problems to reach crisis proportions; the national economy will be affected, and individual lifestyles will suffer as the United States transits a period of adjustment.

Department of Defense installations will not be exempted from this adjustment period and, because of their high visibility in local communities, may experience an even more difficult adjustment. Foresight and cooperation within hydrologic areas will be required by all agencies in what promises to be yet another test of national resolve.

CHAPTER VII ENDNOTES

1. This also appears to support a recent study by the Air Force Civil Engineering Center and a study by John E. Lynch, Office of the Secretary of Defense. See: "Don't Mourn Lost Military Bases", American City and County, September 1977, p. 26 and John E. Lynch, Local Economic Development After Military Base Closures (New York: Praeger Publishers, 1970).

2. Daily Press (Newport News, Virginia), 2 April 1978, Sunday Supplement, Section W. 612 770

APPENDIX A

DOD INSTALLATIONS BY WATER REGION AND AGGREGATED SUBREGION

This appendix consists of a list of the water resources regions and aggregated subregions and the following tables:

1. Army Installations by State (page A-7)
2. Air Force Installations by State (page A-21)
3. Navy and Marine Installations by State (page A-45)
4. DOD Installations by Region (page A-61)
5. Army Installations by Region (page A-99)
6. Air Force Installations by Region (page A-111)
7. Navy and Marine Installations by Region (page A-131)

WATER RESOURCES REGIONS AND AGGREGATED SUBREGIONS

Region Number	Region Name	Aggregated Subregion Number (ASR)	Aggregated Subregion Name
01	New England	0101	Northern Maine
		0102	Saco-Merrimack
		0103	Massachusetts-Rhode Island Coastal
		0104	Housatonic-Thames
		0105	Connecticut River
		0106	Richelieu
02	Mid-Atlantic	0201	Upper Hudson
		0202	Lower Hudson-Long Island-North New Jersey
		0203	Delaware
		0204	Susquehanna
		0205	Upper and Lower Chesapeake
		0206	Potomac
03	South Atlantic-Gulf	0301	Roanoke-Cape Fear
		0302	Pee Dee-Edisto
		0303	Savannah-St Marys
		0304	St Johns-Suwannee
		0305	Southern Florida
		0306	Apalachicola
		0307	Alabama-Choctawhatchee
		0308	Mobil-Tombigbee
04	Great Lakes	0309	Pascagoula-Pearl
		0401	Lake Superior
		0402	NW Lake Michigan
		0403	SW Lake Michigan
		0404	Eastern Lake Michigan
		0405	Lake Huron
		0406	St Clair-Western Lake Erie
		0407	Eastern Lake Erie
05	Ohio	0408	Lake Ontario
		0501	Ohio Headwaters
		0502	Upper Ohio-Big Sandy
		0503	Muskingum-Scioto-Miami
		0504	Kanawha
		0505	Kentucky-Licking-Green-Ohio
		0506	Wabash
		0507	Cumberland

WATER RESOURCES REGIONS AND AGGREGATED SUBREGIONS

Region Number	Region Name	Aggregated Subregion Number (ASR)	Aggregated Subregion Name
06	Tennessee	0601	Upper Tennessee
		0602	Lower Tennessee
07	Upper Mississippi	0701	Mississippi Headwaters
		0702	Black-Root-Chippewa-Wisconsin
		0703	Rock-Mississippi-Des Moines
		0704	Salt-Sny-Illinois
		0705	Lower Upper Mississippi
08	Lower Mississippi	0801	Hatchie-Mississippi-St Francis
		0802	Yazoo-Mississippi-Ouachita
		0803	Mississippi Delta
09	Souis-Red-Rainy	0901	Souris-Red-Rainy
10	Missouri	1001	Missouri-Milk-Saskatchewan
		1002	Missouri-Marias
		1003	Missouri-Musselshell
		1004	Yellowstone
		1005	Western Dakotas
		1006	Eastern Dakotas
		1007	North and South Platte
		1008	Niobrara-Platte-Loup
		1009	Middle Missouri
		1010	Kansas
		1011	Lower Missouri
11	Arkansas-White-Red	1101	Upper White
		1102	Upper Arkansas
		1103	Arkansas-Cimarron
		1104	Lower Arkansas
		1105	Canadian
		1106	Red-Washita
		1107	Red-Sulphur
12	Texas-Gulf	1201	Sabine-Neches
		1202	Trinity-Galveston Bay
		1203	Brazos
		1204	Colorado (Texas)
		1205	Nueces-Texas Coastal
13	Rio Grande	1301	Rio Grande Headwaters
		1302	Middle Rio Grande
		1303	Rio Grande-Pecos
		1304	Upper Pecos
		1305	Lower Rio Grande

WATER RESOURCES REGIONS AND AGGREGATED SUBREGIONS

Region Number	Region Name	Aggregated Subregion Number (ASR)	Aggregated Subregion Name
14	Upper Colorado	1401	Green-White-Yampa
		1402	Colorado-Gunnison
		1403	Colorado-San Juan
15	Lower Colorado	1501	Little Colorado
		1502	Lower Colorado
			Main Stem
16	Great Basin	1503	Gila
		1601	Bear-Great Salt Lake
		1602	Sevier Lake
		1603	Humboldt-Tonopah
			Desert
17	Pacific Northwest	1604	Central Lahontan
		1701	Clark Fork-Kootenai
		1702	Upper/Middle Columbia
		1703	Upper/Central Snake
		1704	Lower Snake
		1705	Coast-Lower Columbia
		1706	Puget Sound
18	California	1707	Oregon Closed Basin
		1801	Klamath-North Coastal
		1802	Sacramento-Lahontan
		1803	San Joaquin-Tulare
		1804	San Francisco Bay
		1805	Central California Coast
		1806	Southern California
19	Alaska	1807	Lahontan-South
		1901	Alaska
20	Hawaii	2001	Hawaii County
		2002	Maui County
		2003	Honolulu County
		2004	Kauai County
21	Caribbean (Not included in this study)	2101	Puerto Rico
		2102	Virgin Islands

SOURCE: US Water Resources Council

TABLE 1. ARMY INSTALLATIONS BY STATE

This table provides an alphabetical listing by state of the Army's primary base structure that is located within the 50 United States. The data shown in each column are described as follows:

INSTALLATION	-- Name of the installation.
CODE	-- Installation Identification Code Number. These data are provided only in this table as an aid for positive installation identification where installation names are similar.
COUNTY	-- Name of the county in which the installation is located.
SMSA	-- Name of the Standard Metropolitan Statistical Area in which the installation is located. If blank, the installation is not in a SMSA as defined by the Office of Management and Budget and published by the Department of Commerce.
REG	-- Water Resources Region in which the installation is located. There are 20 regions in the 50 United States.
ASR	-- Aggregated Subregion in which the installation is located. The last two digits define the ASR and the first one or two digits identify the region number.
SREG	-- Subregion in which the installation is located. The identifier is from the First National Water Assessment and is a further breakdown of the ASR. These data are provided only in this table as an assist to any further studies which compare data from the first and second assessments.
PROBLEMS	-- Specifically identified water and land-related resource problems for the area in which the installation is located. The alpha prefix identifies the category of problem (A--severe problem identified but not yet under study, and B--severe problem already under study). An abbreviated description of the problem may be found in Appendix B by noting the region and problem numbers for the installation in this table. Example: Greely Fort is in Region 19 with Problem Number A1. Turning to Appendix B, find Region 19 and Problem A1. (In Appendix B, Category A problems are listed first in numerical order, followed by Category B problems in numerical order.) Where a second alpha indicator appears, it is the first letter in the state where the installation is located. All problem numbers are the same as those found in the Second National Water Assessment in order to facilitate reference to them.

TABLE 1

ARMY INSTALLATIONS

STATE - AK

INSTALLATION

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
BLACK RAPIDS TNG SITE	02135	FAIRBANKS		19	1901	1903 A1
CLEARWATER LAKE TNG SITE	02162	FAIRBANKS		19	1901	1903 A1
EKLUTNA DISPERSAL SITE	02243	ANCHORAGE	ANCHORAGE	19	1901	1905 A5
FAIRBANKS PERMAFROST STATION	02252	ANCHORAGE	ANCHORAGE	19	1901	1905 A5
GERSTLE RIVER ARCTIC TEST	02262	FAIRBANKS		19	1901	1903 A1
GREELY FORT	02322	FAIRBANKS		19	1901	1903 A1
GULKANA ARMY SITE	02341	FAIRBANKS		19	1901	1903 A1
NG CAMP CARROLL	02349	VALDEZ-CHITINA-WHITT		19	1901	1905 A7
NIKE ALASKA RAY	02478	ANCHORAGE	ANCHORAGE	19	1901	1905 A5
RICHARDSON FORT	02695	ANCHORAGE	ANCHORAGE	19	1901	1905 A5
MAINWRIGHT FORT	02781	ANCHORAGE	ANCHORAGE	19	1901	1905 A5
YUKON COMD TNG SITE	02871	FAIRBANKS		19	1901	1903 A1
	02975	FAIRBANKS		19	1901	1903 A1

STATE - AL

INSTALLATION

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
ALABAMA AAP	01008	TALLADEGA		3	307	315 A315
ALLEN FIELD	01010	HOUSTON		3	306	313 A312 A313
ANNISTON ARMY DEPOT	01012	CALHOUN	ANNISTON	3	307	315 A315
BENNING FORT	01022	RUSSELL	COLUMBUS	3	306	313 A312 A313
CAIRNS AAF	01032	DALE		3	307	314 A314
COOSA RIV STORAGE ANNEX	01045	TALLADEGA		3	307	315 A315
GOLDBERG FIELD	01060	DALE		3	307	314 A314
HIGH BLUFF	01080	GENEVA		3	307	314 A314
HUNT FIELD	01085	GENEVA		3	307	314 A314
LOUISVILLE RM STAGEFIELD	01070	DALE		3	307	314 A314
MCCLELLAN FORT	01090	PIKE		3	307	314 A314
RUNKLE FORT	01102	CALHOUN	ANNISTON	3	307	314 A314
RUNKLE ROBERT LESLIE TAC SITE	01152	COFFEE/DALE		3	307	315 A315
SHELL ARMY HELIPORT	01218	COFFEE		3	307	314 A314
SKELLY FIELD	01262	COFFEE		3	307	314 A314
TAC X	01267	COFFEE		3	307	314 A314
TOTI FIELD	01300	GENEVA		3	307	314 A314
PHOSPHATE DEV WKS	01360	HOUSTON		3	307	314 A314
REDSTONE ARSENAL	01142	COLBERT	FLORENCE	3	306	313 A312 A313
	01202	MADISON	HUNTSVILLE	6	602	603

TABLE 1

ARMY INSTALLATIONS

STATE - AR

INSTALLATION

PINE BLUFF ARS IND
CHAFFEE FORT

CODE COUNTY SMSA

05087 JEFFERSON PINE BLUFF
05025 SEBASTIAN/FRANKLIN FORT SMITH

REG ASR SREG PROBLEMS

8 802 804
11 1104 1111 AA-3 BA-5

STATE - AZ

INSTALLATION

HUACHUCA FORT
HUACHUCA FT GILA BEND AREA
HUACHUCA FT WILLCOX AREA
HUACHUCA FT WILLCOX AREA
NAVAJO DEPOT ACTIVITY
NG FLORENCE
YUMA PROVING GROUND

CODE COUNTY SMSA

04005 COCHISE
04009 MARICOPA/YUMA
04011 GRAHAM/NAVAJO
04011 GRAHAM/NAVAJO
04650 COCONINO
04735 PINAL
04985 YUMA

REG ASR SREG PROBLEMS

15 1503 1504 A0-1 A0-2 A3-3
15 1503 1505 A0-1 A0-2 A3-4
15 1501 1501 A0-1 A0-2 A1-2 A3-
15 1501 1501 A0-1 A0-2 A1-2 A3-
15 1502 1502 A0-1 A0-2 A2-1
15 1503 1504 A0-1 A0-2 A3-6
15 1502 1506 A0-1 A0-2 A2-5

STATE - CA

INSTALLATION

BAKER FORT EAST
BRANCH US08 LOMPOC
DEFENSE DEPOT TRACY
HF RAD SANTA ROSA
HUNTER LIGGETT FORT
IRWIN FORT
IRWIN FORT ANNEX
LAWDALE ARMY MISSILE PLANT
MACARTHUR FORT
MONTEREY PRESIDIO OF
NG CAMP ROBERTS
OAKLAND ARMY BASE
ORD FORT
PARKS CAMP
RIO VISTA STORAGE AREA FACILITY
RIVERBANK AAP
ROBERTS CAMP ANNEX
SACRAMENTO ARMY DEP
SAN FRANCISCO PRESIDIO OF
SHARPE ARMY DEPOT
SIERRA ARMY DEPOT

CODE COUNTY

06035 MARIN
06085 SANTA BARBARA
06827 SAN JOAQUIN
06175 SONOMA
06626 MONTEREY
06255 SAN BERNARDINO
06226 SAN BERNARDINO
06235 LOS ANGELES
06275 LOS ANGELES
06305 MONTEREY
06740 MONTEREY/SAN LUIS OB
06605 ALAMEDA
06625 MONTEREY
06685 ALAMEDA/CONTRA COSTA
06726 SOLANO
06735 STANISLAUS
06741 SAN LUIS OBISPO
06765 SACRAMENTO
06781 SAN FRANCISCO
06806 SAN JOAQUIN
06815 LASSEN

SMSA

SAN FRANCISCO-OAKLAND
SANTA BARBARA-SANTA MARIA-LOMPOC
STOCKTON
SANTA ROSA
SALINAS-SEASIDE-MONTEREY
RIVERSIDE-SAN BERNARDINO-ONTARIO
RIVERSIDE-SAN BERNARDINO-ONTARIO
LOS ANGELES-LONG BEACH
LOS ANGELES-LONG BEACH
SALINAS-SEASIDE-MONTEREY
SALINAS-SEASIDE-MONTEREY
SAN FRANCISCO-OAKLAND
SALINAS-SEASIDE-MONTEREY
SAN FRANCISCO-OAKLAND
VALLEJO-FAIRFIELD-NAPA
MODESTO
SACRAMENTO
SAN FRANCISCO-OAKLAND
STOCKTON

REG ASR SREG PROBLEMS

18 1804 1806 8042
18 1805 1807
18 1803 1805
18 1804 1806 A051
18 1805 1807 A051
18 1806 1808
18 1806 1808 8042
18 1806 1808 8062
18 1805 1807 A051
18 1805 1807
18 1804 1806 8042
18 1805 1807 A051
18 1804 1806 8042
18 1804 1806 8023
18 1803 1804 A031
18 1805 1807 A051
18 1802 1802 A021
18 1804 1806 8042
18 1803 1805
18 1802 1802

TABLE 1			
ARMY INSTALLATIONS			
STATE - CO			
INSTALLATION	CODE	COUNTY	SMSA
FITZSIMMONS ARMY MEDICAL CENTER	08055	ADAMS	DENVER-BOULDER
ROCKY MTN ARS	08605	ADAMS	DENVER-BOULDER
CARSON FORT	08005	EL PASO	COLORADO SPRINGS
PUEBLO ARMY DEPOT	08505	PUEBLO	PUEBLO
REG ASR SREG PROBLEMS			
	10	1007	1019 R23
	10	1007	1019 R23
	11	1102	1102 AC-1
	11	1102	1102 AC-1
STATE - DC			
INSTALLATION	CODE	COUNTY	SMSA
MCNAIR FORT LESLEY J	11605	DIST OF COL	WASHINGTON
REED WALTER AMC	11865	DIST OF COL	WASHINGTON
REG ASR SREG PROBLEMS			
	2	206	207 R22
	2	206	207 R22
STATE - DE			
INSTALLATION	CODE	COUNTY	SMSA
FIRST ARMY RECREATION AREA	10525	SUSSEX	WILMINGTON
NG NEW CASTLE	10605	NEW CASTLE	WILMINGTON
REG ASR SREG PROBLEMS			
	2	205	206 B19
	2	203	204 B10
STATE - FL			
INSTALLATION	CODE	COUNTY	SMSA
BENNING FORT MORENO POINT	12045	OKALOOSA	JACKSONVILLE
BLANDING CAMP	12125	CLAY	JACKSONVILLE
REG ASR SREG PROBLEMS			
	3	307	314 A314
	3	304	308 A308

TABLE 1
ARMY INSTALLATIONS
STATE - GA

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
BENNING FORT	13025	CHATTahooCHEE/MUSCOG	COLUMBUS	3	306	313 A312 A313
BENNING FORT TNG AREA	13027	LUMPKIN		3	306	313 A312 A313
CU CHI STAGEFIELD 02	13042	CHATHAM	SAVANNAH	3	303	306 A306
DAU TIENG STAGEFIELD 04	13044	BRYAN	SAVANNAH	3	303	306 A306
GILLEN FORT	13015	CLAYTON	ATLANTA	3	306	313 A312 A313
GORDON FT	13055	COLUM/JEFF/MCDUFF	AUGUSTA	3	303	306 A306
GORDON FT OLIVER AREA	13057	RICHMOND	AUGUSTA	3	303	306 A306
GORDON FT RECR AREA	13059	COLUMBIA	AUGUSTA	3	303	306 A306
HUNTER ARMY AIRFIELD	13070	CHATHAM	SAVANNAH	3	303	306 A306
LOC NINH STAGEFIELD 03	13090	EFFINGHAM	SAVANNAH	3	306	313 A312 A313
MCPHERSON FT	13115	FULTON	ATLANTA	3	307	315 A315
MCPHERSON FT RECR AREA	13116	BARTON		3	303	307 A307
MILITARY OCEAN TNL KINGS BAY	13075	CAMDEN		3	303	306 A306 A307
STEWART FORT	13305	LIB/LNG/BRYN/EVN/TAT	SAVANNAH	3	303	306 A306
NG CATOOSA RIFLE RANGE	13255	CATOOSA	CHATTANOOGA	6	601	602 A5

STATE - HI

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
ALIAMANU MIL RES	15005	HONOLULU	HONOLULU	20	2003	2006 86-3
DE RUSSY FORT	15035	HONOLULU	HONOLULU	20	2003	2006 86-3
DILLINGHAM MIL RES	15032	HONOLULU	HONOLULU	20	2003	2006 86-6
HELEMANO RAD REC STA	15115	HONOLULU	HONOLULU	20	2003	2006 86-6
HONOLULULI MIL RES	15125	HONOLULU	HONOLULU	20	2003	2006 86-3
KAENA POINT MIL RES	15205	HONOLULU	HONOLULU	20	2003	2006 86-5
KAHUKU TNG AREA	15225	HONOLULU	HONOLULU	20	2003	2006 86-6
KAMEHAMEHA FORT	15245	HONOLULU	HONOLULU	20	2003	2006 86-3
KAPALAMA MIL RES	15265	HONOLULU	HONOLULU	20	2003	2006 86-3
KILAUEA MIL RES	15375	HAWAII	HONOLULU	20	2001	2001 81-2
KIPAPA AMMO STOR SITE	15395	HONOLULU	HONOLULU	20	2003	2006 86-6
MAKUA MIL RES	15545	HONOLULU	HONOLULU	20	2003	2006 86-6
POHAKULOA TNG AREA	15705	HAWAII	HONOLULU	20	2001	2001 81-2
RUGER FORT	15765	HONOLULU	HONOLULU	20	2003	2006 86-3
SCHOFIELD HKS MIL RES	15815	HONOLULU	HONOLULU	20	2003	2006 86-4
SHAFTER FORT	15835	HONOLULU	HONOLULU	20	2003	2006 86-3
TRIPLER ARMY MEDICAL CENTER	15875	HONOLULU	HONOLULU	20	2003	2006 86-3
MAIANAE KAT MIL RES	15985	HONOLULU	HONOLULU	20	2003	2006 86-6
MAIANA MILITARY RESERVATION	15995	HONOLULU	HONOLULU	20	2003	2006 86-6
MAIKAKALAU AMMO STOR TUNNELS	15999	HONOLULU	HONOLULU	20	2003	2006 86-6

TABLE 1

ARMY INSTALLATIONS

STATE - IA

INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
DES MOINES FORT	19045	POLK	DES MOINES	7 703 709 A34
IOWA AAP	19105	DES MOINES		7 703 710 A2

STATE - IL

INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
JOLIET AAP ELWOOD	17305	MILL	CHICAGO	4 403 404 A9
JOLIET AAP KANKAKEE	17306	MILL	CHICAGO	4 403 404 A9
NG MAINTENANCE CENTER	17465	COOK	CHICAGO	4 403 404 A9
SHERIDAN FORT	17805	LAKE	CHICAGO	4 403 404 A9
NG LINCOLN ORD DEPOT	17485	SANGAMON	SPRINGFIELD	7 704 713 B7
ROCK ISLAND ARS	17775	ROCK ISLAND	DAVENPORT-ROCK ISLAND-MOLINE	7 703 710 A13
SAVANNA ARMY DEPOT	17795	CARR/JO DAV		7 703 707 A1
USA ST LOUIS AREA SUPPORT CTN	17255	MADISON	ST LOUIS	7 705 714 A3

STATE - IN

INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
ATTERBURY RES FORCES TNG AREA	18055	JOHNSON/BARTHO/BROWN	INDIANAPOLIS	5 506 512 A14
HARRISON FORT BENJAMIN	18175	MARION	INDIANAPOLIS	5 506 512 A14
INDIANA ARMY AMMUNITION PLANT	18226	CLARK		5 505 511 A15
JEFFERSON PROVING GROUND	18255	JEFF/RIPLY/JENNINGS		5 505 511 A14
NEWPORT AAP	18375	VERMILLION	TERRE HAUTE	5 506 513 A14

STATE - KS

INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
DEF IND PLT EGP FAC	20015	ATCHISON		10 1009 1024
LEAVENWORTH FORT	20395	LEAVENWORTH		10 1010 1027
RILEY FORT	20605	GEARY/RILEY		10 1010 1027
SCHILLING MANOR	20610	SALINE		10 1010 1026 B27
SUNFLOWER AAP	20655	JOHNSON	KANSAS CITY	10 1011 1030 B28
KANSAS AAP	20325	LABETTE		11 1104 1107

TABLE 1				ARMY INSTALLATIONS		STATE - KY	
INSTALLATION				CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
BLUE GRASS DEPOT ACTIVITY CAMPBELL FT KNOX FORT LEX BLUE GRASS D ACTIVITY	21045	MADISON		21145	CHRISTIAN	CLARKSVILLE-HOPKINSVILLE	5 505 510 A13
	21145	CHRISTIAN		21405	MADISON	CLARKSVILLE	5 507 514 A18
	21405	MADISON		21479	FAYETTE	LEXINGTON-FAYETTE	5 505 511 A15
	21479	FAYETTE					5 505 510 A12 A13
STATE - LA				CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
NEW ORLEANS ARMY BASE NG CAMP LIVINGSTON POLK FORT LOUISIANA AAP	22585	ORLEANS		22625	RAPIDES	NEW ORLEANS	8 803 809 A1-1
	22625	RAPIDES		22725	VERNON	ALEXANDRIA	8 802 804
	22725	VERNON		22505	WEBSTER	SHREVEPORT	8 803 808 ***
	22505	WEBSTER					11 1107 1114 AL-1 BL-2
STATE - MA				CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
DEVENS FORT EDWARDS CAMP SOUTH BOSTON SUPPORT ACT US ARMY MAT & MECH RESRCH CEN USA NATICK DEV CEN USA NATICK DEV CEN ANX	25145	MIDDLESEX		25175	BARNSTABLE	BOSTON/WORCHESTER	1 103 106 A10
	25175	BARNSTABLE		25075	SUFFOLK	BOSTON	1 103 106 B11
	25075	SUFFOLK		25965	MIDDLESEX	BOSTON	1 103 106 B11
	25965	MIDDLESEX		25690	MIDDLESEX	BOSTON	1 103 106 A10
	25345	MIDDLESEX				BOSTON	1 103 106 A10

TABLE 1

ARMY INSTALLATIONS

STATE - MD

INSTALLATION

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
ABERDEEN PROVING GROUND	24015	HARFORD	BALTIMORE	2	205	206 817 818
ABERDEEN PROVING GROUND EDGEWOOD	24045	HARFORD/BALTIMORE	BALTIMORE	2	205	206 817
DEFENSE MAPPING AGENCY	24075	MONTGOMERY	WASHINGTON	2	206	207 822
DETROIT FT	24225	FREDERICK	WASHINGTON	2	206	207 822
HARRY DIAMOND LABS	24234	MONTGOM/PRINCE GEORG	WASHINGTON	2	206	207 822
MEADE FORT GEORGE G	24235	CHARLES	WASHINGTON	2	206	207 822
REED WALTER AMC FOREST G	24355	ANNE ARUNDEL	BALTIMORE	2	205	206 818
REED WALTER AMC GLENHAVEN	24605	MONTGOMERY	WASHINGTON	2	206	207 822
RITCHIE FT	24606	MONTGOMERY	WASHINGTON	2	206	207 822
RITCHIE FT GUIRAUK STA A	24625	WASHINGTON	WASHINGTON	2	206	207 822
RITCHIE FT SHARPSBURG SITE	24626	WASHINGTON	WASHINGTON	2	206	207 822
SUITLAND ANNEX	24955	PRINCE GEORGES	WASHINGTON	2	206	207 822

A-14

STATE - MI

INSTALLATION

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
CUSTER FORT	26104	CALHOUN-KALAMAZOO	BATTLE CREEK/KALAMAZOO-PORTAGE	4	404	405 A10 A11
DETROIT ARSENAL	26155	MACOMB	DETROIT	4	406	409 A16
DETROIT ARSENAL TANK PLANT	26156	MACOMB	DETROIT	4	406	409 A16
MICHIGAN ARMY MSL PLANT	26445	MACOMB	DETROIT	4	406	409 A16
NG CAMP LUCAS	26394	CHIPPEWA	DETROIT	4	401	402 A4
NG GRAYLING AAF	26515	CRAWFORD	DETROIT	4	405	407 A13
PONTIAC STOR ACT	26178	OAKLAND	DETROIT	4	406	409 A16

STATE - MN

INSTALLATION

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
TWIN CITIES AR AMMUNITION PLT	27650	RAMSEY	MINNEAPOLIS-ST PAUL	7	701	702 823

TABLE 1

ARMY INSTALLATIONS

STATE - MO

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
GATEWAY ARMY AMMUNITION PLANT	29799	ST CHARLES	ST LOUIS	7	705	714 A3
ST LOUIS AAP	29797	ST LOUIS	ST LOUIS	7	705	714 A3
WELDON SPRING RES FCS ING	29985	ST CHARLES	ST LOUIS	7	705	714 A3
LAKE CITY ARMY AMMUNITION PLT	29405	JACKSON	KANSAS CITY	10	1011	1030 828
NG CAMP CLARK	29505	VERNON		10	1011	1029
WOOD FT LEONARD	29995	LACLEDE/PHELPS/PULAS		10	1011	1029
WOOD FT LEONARD REC AR OZ	29999	CAMDEN		10	1011	1029 A7

STATE - MS

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
NG CAMP SHELBY	28485	FORREST/PERRY		3	309	317 A317
NG CAMP MC CAIN	28475	GRENADA		8	802	803 A2-1 A2-3

STATE - MT

INSTALLATION	CODE	COUNTY	SMS	REG ASR	SREG	PROBLEMS
NG FT WM HENRY HARRISON	30655	LEWIS AND CLARK		10	1002	1003
FORT MISSOULA	30555	MISSOULA		17	1701	1702

STATE - NC

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
BRAGG FT	37225	CUMBERLAND/HOKE	FAYETTEVILLE	3	301	303 A303
BRAGG FT RECR CEN 02	37228	CUMBERLAND	FAYETTEVILLE	3	301	303 A303
MILITARY OCEAN TML SUNNY POINT	37745	BRUNSWICK	WILMINGTON	3	301	303 A303
NG BLUETHENTHAL FIELD	37555	NEW HANOVER	WILMINGTON	3	301	303 A303
TARHEEL ARMY MISSILE PLT	37805	ALAMANCE	BURLINGTON	3	301	303 A303

TABLE 1

ARMY INSTALLATIONS

STATE - ND

INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
MICKELSON STANLEY R SFG RSL 1	38527	CAVALIER		9 901 902
MICKELSON STANLEY R SFG RSL 2	38523	CAVALIER		9 901 902
US ARMY SAFEGUARD CMD MSR	38522	CAVALIER		9 901 902 A14
US ARMY SAFEGUARD CMD PAR	38521	PEMBINA		9 901 902 A15
US ARMY SAFEGUARD CMD RSL 3	38524	CAVALIER		9 901 902 A14
US ARMY SAFEGUARD CMD RSL 4	38529	WALSH		9 901 902 A14
US ARMY SAFEGUARD CMD WTR	38520	WALSH		9 901 902 A13

STATE - NE

INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
CORNHUSKER AR AMMUNITION PLT	31135	HALL		10 1008 1021 B25
NG MEAD	31487	SAUNDERS		10 1008 1022 B24

STATE - NH

INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
COLD REGIONS RE LAR	33450	GRAFTON		1 105 108 B16

STATE - NJ

INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
DIX FORT	34245	BURLINGTON/OCEAN	PHILADELPHIA	2 203 204 B12
HANCOCK FORT	34405	MONMOUTH	LONG BRANCH-ASBURY PARK	2 202 203 B11
MILITARY OCEAN TML BAYONNE	34515	HUDSON	NEW YORK	2 202 203 B6
MONMOUTH FORT CHAS WOOD	34556	MONMOUTH	LONG BRANCH-ASBURY PARK	2 202 203 B11
MONMOUTH FORT COLES	34557	MONMOUTH	LONG BRANCH-ASBURY PARK	2 202 203 B11
MONMOUTH FORT EVANS	34558	MONMOUTH	LONG BRANCH-ASBURY PARK	2 202 203 B11
MONMOUTH FORT HQ ECOM	34555	MONMOUTH	LONG BRANCH-ASBURY PARK	2 202 203 B11
MONMOUTH FORT OAKHURST	34559	MONMOUTH	LONG BRANCH-ASBURY PARK	2 202 203 B11
PEDRICKTOWN SUPPORT FACIL	34775	SALEM	WILMINGTON	2 203 204 B10
PICATINNY ARS	34855	MORRIS	NEWARK	2 203 203 B6

ARMY INSTALLATIONS

ARMY INSTALLATIONS

STATE - NM

INSTALLATION

BLISS FORT AAA RANGES
WHITE SANDS MSL RG
WINGATE FT DEP ACTIVITY

REG	ASR	SREG	PROBLEMS
13	1302	1302	AN-1 AN-3 AN-5
13	1302	1305	AN-1 AN-5
15	1501	1501	A0-1 A0-2 A1-1

STATE - NV

INSTALLATION

LAKE MEAD BASE

REFC ASD SPEC PROBLEMS

15 1502 1502 A0-1 A0-2 A2-4

STATE - NY

INSTALLATION

HAMILTON FORT
MANHATTAN BEACH HSG
MILITARY OCEAN TML
STEWART ANNEX
MILDEN FORT
OTTEN FORT
MAADSWORTH FORT
WATERVLIET ARSENAL
WEST POINT MIL RES
BRUM FORT
GENEVA ARMY DEPOT

1
 2
 3
 4
 5
 6
 7
 8
 9
 10
 11
 12
 13
 14
 15
 16
 17
 18
 19
 20
 21
 22
 23
 24
 25
 26
 27
 28
 29
 30
 31
 32
 33
 34
 35
 36
 37
 38
 39
 40
 41
 42
 43
 44
 45
 46
 47
 48
 49
 50
 51
 52
 53
 54
 55
 56
 57
 58
 59
 60
 61
 62
 63
 64
 65
 66
 67
 68
 69
 70
 71
 72
 73
 74
 75
 76
 77
 78
 79
 80
 81
 82
 83
 84
 85
 86
 87
 88
 89
 90
 91
 92
 93
 94
 95
 96
 97
 98
 99
 100
 101
 102
 103
 104
 105
 106
 107
 108
 109
 110
 111
 112
 113
 114
 115
 116
 117
 118
 119
 120
 121
 122
 123
 124
 125
 126
 127
 128
 129
 130
 131
 132
 133
 134
 135
 136
 137
 138
 139
 140
 141
 142
 143
 144
 145
 146
 147
 148
 149
 150
 151
 152
 153
 154
 155
 156
 157
 158
 159
 160
 161
 162
 163
 164
 165
 166
 167
 168
 169
 170
 171
 172
 173
 174
 175
 176
 177
 178
 179
 180
 181
 182
 183
 184
 185
 186
 187
 188
 189
 190
 191
 192
 193
 194
 195
 196
 197
 198
 199
 200
 201
 202
 203
 204
 205
 206
 207
 208
 209
 210
 211
 212
 213
 214
 215
 216
 217
 218
 219
 220
 221
 222
 223
 224
 225
 226
 227
 228
 229
 230
 231
 232
 233
 234
 235
 236
 237
 238
 239
 240
 241
 242
 243
 244
 245
 246
 247
 248
 249
 250
 251
 252
 253
 254
 255
 256
 257
 258
 259
 260
 261
 262
 263
 264
 265
 266
 267
 268
 269
 270
 271
 272
 273
 274
 275
 276
 277
 278
 279
 280
 281
 282
 283
 284
 285
 286
 287
 288
 289
 290
 291
 292
 293
 294
 295
 296
 297
 298
 299
 300
 301
 302
 303
 304
 305
 306
 307
 308
 309
 310
 311
 312
 313
 314
 315
 316
 317
 318
 319
 320
 321
 322
 323
 324
 325
 326
 327
 328
 329
 330
 331
 332
 333
 334
 335
 336
 337
 338
 339
 340
 341
 342
 343
 344
 345
 346
 347
 348
 349
 350
 351
 352
 353
 354
 355
 356
 357
 358
 359
 360
 361
 362
 363
 364
 365
 366
 367
 368
 369
 370
 371
 372
 373
 374
 375
 376
 377
 378
 379
 380
 381
 382
 383
 384
 385
 386
 387
 388
 389
 390
 391
 392
 393
 394
 395
 396
 397
 398
 399
 400
 401
 402
 403
 404
 405
 406
 407
 408
 409
 410
 411
 412
 413
 414
 415
 416
 417
 418
 419
 420
 421
 422
 423
 424
 425
 426
 427
 428
 429
 430
 431
 432
 433
 434
 435
 436
 437
 438
 439
 440
 441
 442
 443
 444
 445
 446
 447
 448
 449
 450
 451
 452
 453
 454
 455
 456
 457
 458
 459
 460
 461
 462
 463
 464
 465
 466
 467
 468
 469
 470
 471
 472
 473
 474
 475
 476
 477
 478
 479
 480
 481
 482
 483
 484
 485
 486
 487
 488
 489
 490
 491
 492
 493
 494
 495
 496
 497
 498
 499
 500
 501
 502
 503
 504
 505
 506
 507
 508
 509
 510
 511
 512
 513
 514
 515
 516
 517
 518
 519
 520
 521
 522
 523
 524
 525

2	202	203	86
2	202	203	86
2	202	203	86
2	201	202	83
2	202	203	86
2	202	203	86
2	202	203	86
2	201	202	82
2	201	202	83
4	408	415	A28
4	408	414	A26

STATE - OH

INSTALLATION

IMA ARMY MOD CEN
G AKRON CANTON APT
ERRY CAMP ERIE ARMY DEPOT
AVENNA ARMY AMMUNITION PLANT
EF CONSTR SUP CTR
G CAMP SHERMAN

3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
841
842

4	406	410	A18
4	407	411	A20
4	406	410	A19
4	407	411	A20
5	503	506	A10
5	503	506	A10

TABLE 1

ARMY INSTALLATIONS

STATE - OK

INSTALLATION

GRUBER CAMP
SILL FORTCODE COUNTY
40580 MUSKOGEE
40755 COMANCHESMSA
LAWTONREG ASR SREG PROBLEMS
11 1104 1111 AO-3
11 1106 1113 AO-5

STATE - OR

INSTALLATION

UMATILLA DEPOT ACTIVITY

CODE COUNTY
41725 UMATILLA/MORROW

SMSA

REG ASR SREG PROBLEMS
17 1702 1711 A4

STATE - PA

INSTALLATION

CARLISLE BARRACKS
DEF PERS SUPPORT CTR
FRANKFORD ARS
INDIANTOWN GAP FORT
LETTERKENNY ARMY DEPOT
NEW CUMBERLAND ARMY DEPOT
SCRANTON ARMY AMMUNITION PLANT
TACONY WAREHOUSE PENN
TOBYHANNA ARMY DEPOT
HAYS ARMY AMMUNITION PLTCODE COUNTY
42155 CUMBERLAND
42665 PHILADELPHIA
42245 PHILADELPHIA
42305 LEBANON/DAUPHIN
42345 FRANKLIN
42400 YORK
42755 LACKAWANNA
42246 PHILADELPHIA
42780 MONROE
42295 WESTMORELANDSMSA
HARRISBURG
PHILADELPHIA
PHILADELPHIA
HARRISBURG
YORK
NORTHEAST PENNSYLVANIA
PHILADELPHIA
NORTHEAST PENNSYLVANIA
PITTSBURGHREG ASR SREG PROBLEMS
2 204 205 B17
2 203 204 B10
2 203 204 B10
2 204 205 B16
2 204 207 B22
2 204 205 B17
2 204 205 B16
2 203 204 B10
2 203 204 B8
5 502 503 A1

STATE - SC

INSTALLATION

CHARLESTON ARMY DEPOT
JACKSON FORTCODE COUNTY
45255 CHARLESTON/BERKELEY
45455 RICHLANDSMSA
CHARLESTON-NORTH CHARLESTON
COLUMBIAREG ASR SREG PROBLEMS
3 302 305 A305R
3 302 305 A305R

TABLE 1

ARMY INSTALLATIONS

STATE - TN

INSTALLATION

HOLSTON ARMY AMMO PLT
VOLUNTEER AAP
DEFENSE DEPOT MEMPHIS
MILAN ARMY AMMUNITION PLANT

CODE COUNTY

47305 SULLIVAN/HAWKINS
47855 HAMILTON
47425 SHELBY
47475 CARROLL/GIBSON

SMSA

JOHNSON CITY-KINGSPORT-BRISTOL
CHATTANOOGA
MEMPHIS

REG ASR SREG PROBLEMS

6 601 601 A1
6 601 602 A5
8 801 801 A1-7 A1-8 A1-9
8 801 801 A1-6

STATE - TX

INSTALLATION

LONE STAR ARMY AMMUNITION PLT
LONGHORN AAP
RED RIVER AR DEPOT
BULLIS CAMP
HOOD FORT
HOUSTON FORT SAW
NG CAMP SWIFT
SAGINAW ARMY AIRCRAFT PLANT
STANLEY CAMP STOR ACTV
WOLTERS FORT
BLISS FORT
BLISS FORT

CODE COUNTY

48305 BOWIE
48315 HARRISON
48515 BOWIE
48145 BEXAR/COMAL
48255 BELL/CORYELL
48265 BEXAR
48555 BASTROP
48251 TARRANT
48545 BEXAR
48955 PARKER/PALO PINTO
48125 EL PASO
48125 EL PASO

SMSA

TEXARKANA-TEXARKANA
LONGVIEW
TEXARKANA-TEXARKANA
SAN ANTONIO
KILLEEN-TEMPLE
SAN ANTONIO
DALLAS-FT WORTH
SAN ANTONIO
DALLAS-FT WORTH
EL PASO
EL PASO

REG ASR SREG PROBLEMS

11 1107 1114 AT-1 AT-2
11 1107 1114 AT-1 AT-2
11 1107 1114 AT-1 AT-2
12 1205 1210 A16 A17
12 1205 1207 A14 A16 A17
12 1205 1210 A16 A17
12 1205 1210 A16 A17
12 1204 1209 A16 A17
12 1205 1203 A16 A17
12 1205 1210 A16 A17
12 1203 1206 A16 A17
12 1203 1202 AT-1 AT-4
13 1302 1302 AT-1 AT-4 AT-5 AT-

STATE - UT

INSTALLATION

GREEN RIVER TEST COMPLEX
DEFENSE DEPOT OGDEN
DUGWAY PROVING GROUND
NG CAMP WILLIAMS
TOOELE ARMY DEPOT
TOOELE ARMY DEPOT SOUTH AREA

CODE COUNTY

49350 GRAND
49855 WEBER
49295 TOOELE
49455 SALT LAKE/UTAH
49575 TOOELE
49245 TOOELE

SMSA

SALT LAKE CITY-OGDEN
SALT LAKE CITY-OGDEN
SALT LAKE CITY-OGDEN/PROVO-OREM
SALT LAKE CITY-OGDEN
SALT LAKE CITY-OGDEN

REG ASR SREG PROBLEMS

14 1402 1406 A3
16 1601 1602 A2
16 1601 1602 A3
16 1601 1602 A3
16 1601 1602 A3
16 1601 1602 A3

TABLE 1

ARMY INSTALLATIONS

STATE - VA

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG PROBLEMS
ARLINGTON HALL STATION	51060	ARLINGTON	WASHINGTON	2	206 207 822
ARLINGTON MATL CEM	51070	ARLINGTON	WASHINGTON	2	206 207 822
BELVOIR FORT	51105	FAIRFAX	WASHINGTON	2	206 207 822
CAMERON STATION	51115	ALEXANDRIA	WASHINGTON	2	205 208 826
DEF GEN SUPPLY CENTER	51595	CHESTERFIELD	RICHMOND	2	205 208 827
EUSTIS FORT	51215	NEWPORT NEWS	NEWPORT NEWS-HAMPTON	2	205 208 824
FORT AP HILL VA	51290	CAROLINE/ESSEX	PETERSBURG-COLONIAL HEIGHTS-HOPE	2	205 208 826
FORT LEE VA	51315	PRINCE GEORGE	PETERSBURG-COLONIAL HEIGHTS-HOPE	2	205 208 826
FORT PICKETT	51535	NOTTO/BRUNS/DINW/LUN	WASHINGTON	2	206 207 822
HARRY DIAMOND LABS WDBRGE	51185	PRINCE WILLIAM	WASHINGTON	2	205 208 827
MONROE FORT	51360	HAMPTON	WASHINGTON	2	206 207 822
MYER FORT	51375	ARLINGTON	WASHINGTON	2	205 208 827
STORY FORT	51665	VIRGINIA BEACH	NORFOLK-VIRGINIA BEACH-PORTSMOUT	2	205 208 822
VINT HILL FARMS STA	51855	FAUQUIER	WASHINGTON	2	206 207 822
RADFORD ARMY AMMO PLT NEW RIVER	51566	PULASKI	WASHINGTON	5	504 505 A6
RADFORD ARMY AMMUNITION PLANT	51565	MONTGOMERY/PULASKI	WASHINGTON	5	504 505 A6

STATE - VT

INSTALLATION

DARCOM FIRING RANGE UNDERHILL
 NG ETHAN ALLEN AFB

REG ASR	SREG PROBLEMS
1	106 201 A20
1	106 201 A20

STATE - WA

INSTALLATION

LAWTON FORT
 LEWIS FORT
 VANCOUVER BARRACKS
 YAKIMA FIRING CENTER

REG ASR	SREG PROBLEMS
17	1706 1714 A2
17	1706 1714 A2
17	1705 1713 A4
17	1702 1704

STATE - WI

INSTALLATION

BADGER ARMY AMMUNITION PLANT
 MCCOY FORT

REG ASR	SREG PROBLEMS
7	702 706 A18
7	702 706 A17

TABLE 2. AIR FORCE INSTALLATIONS BY STATE

This table provides an alphabetical listing by state of the Air Force's primary base structure that is located within the 50 United States. The data shown in each column are described as follows:

INSTALLATION	-- Name of the installation.
CODE	-- Installation Identification Code Number. These data are provided only in this table as an aid for positive installation identification where installation names are similar.
COUNTY	-- Name of the county in which the installation is located.
SMSA	-- Name of the Standard Metropolitan Statistical Area in which the installation is located. If blank, the installation is not in a SMSA as defined by the Office of Management and Budget and published by the Department of Commerce.
REG	-- Water Resources Region in which the installation is located. There are 20 regions in the 50 United States.
ASR	-- Aggregated Subregion in which the installation is located. The last two digits define the ASR and the first one or two digits identify the region number.
SREG	-- Subregion in which the installation is located. The identifier is from the First National Water Assessment and is a further breakdown of the ASR. These data are provided only in this table as an assist to any further studies which compare data from the first and second assessments.
PROBLEMS	-- Specifically identified water and land-related resource problems for the area in which the installation is located. The alpha prefix identifies the category of problem (A--severe problem identified but not yet under study, and B--severe problem already under study). An abbreviated description of the problem may be found in Appendix B by noting the region and problem numbers for the installation in this table. Example: Galena Airport is in Region 19 with Problem Number B12. Turning to Appendix B, find Region 19 and Problem B12. (In Appendix B, Category A problems are listed first in numerical order, followed by Category B problems in numerical order.) Where a second alpha indicator appears, it is the first letter in the state where the installation is located. All problem numbers are the same as those found in the Second National Water Assessment in order to facilitate reference to them.

TABLE 2

AIR FORCE INSTALLATIONS

STATE - AK

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
ANCHORAGE IAP ADMIN ANNEX	AJBT	ANCHORAGE	ANCHORAGE	19 1901	1905	A5
BARTER ISLAND DEM STATION	AYED	UPPER YUKON		19 1901	1903	A3
BLAIR LAKE AIR FORCE RANGE	BYSG	FAIRBANKS		19 1901	1903	A1
CAMPION AIR FORCE STATION	CYMU	YUKON-KOYUKUK		19 1901	1903	B12
CAPE LISBURNE AIR FORCE STATION	DBOT	BARROW		19 1901	1901	A3
CAPE NEWENHAM AIR FORCE STATION	DBST	BETHEL		19 1901	1904	B15
CAPE ROMANTOF AIR FORCE STATION	DBMT	MADE HAMPTON		19 1901	1903	B14
CLEAR MISSILE EARLY WARNING STATION	DEEB	FAIRBANKS		19 1901	1903	A1
COLD BAY AIR FORCE STATION	ECMV	ALEUTIAN ISLANDS		19 1901	1904	B16
EIELSON AIR FORCE BASE	FTOM	FAIRBANKS		19 1901	1903	A1
ELMENDORF AIR FORCE BASE	FXSB	ANCHORAGE	ANCHORAGE	19 1901	1905	A5
FORT YUKON AIR FORCE STATION	HMDF	UPPER YUKON		19 1901	1903	B11
GALENA AIRPORT	HPZW	YUKON KOYUKUK		19 1901	1903	B12
INDIAN MOUNTAIN AIP FORCE STATION	LKRC	YUKON KOYUKUK		19 1901	1903	B12
KING SALMON AIRPORT	MFJF	KORUK		19 1901	1902	B8
KOTZERUE AIR FORCE STATION	MLGD	ANCHORAGE	ANCHORAGE	19 1901	1905	A5
KULIS ANG BASE	MLRV	FAIRBANKS		19 1901	1903	A1
MURPHY DOME AIR FORCE STATION	RCVD	ANCHORAGE		19 1901	1903	A1
POINT BARROW DEM STATION	TKLM	BARROW		19 1901	1901	A3
SHENYA AIR FORCE BASE	VNMH	ALEUTIAN ISLANDS		19 1901	1904	B16
SPARREVOHN AIR FORCE STATION	VYLK	BRISTOL BAY		19 1901	1904	A2
TATALINA AIR FORCE STATION	WSFW	KUSKOWIM		19 1901	1903	B15
TIN CITY AIR FORCE STATION	WMXD	NONE		19 1901	1902	B9

STATE - AL

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
BIRMINGHAM MAP AIR NATIONAL GUARD	BRKR	JEFFERSON	BIRMINGHAM	3 308	316	A316B
CRAIG AIR FORCE BASE	EYMB	DALLAS		3 307	315	A315
DANNELLY FIELD AIR NATIONAL GUARD	FAKZ	MONTGOMERY	MONTGOMERY	3 307	315	A315
DAUPHIN ISLAND AIR FORCE STATION	F8BH	MOBILE	MOBILE	3 308	316	A316C
GUNTER AIR FORCE BASE	JUBJ	MONTGOMERY	MONTGOMERY	3 307	315	A315
HALL AIR NATIONAL GUARD STATION	JXPJ	HOUSTON		3 306	313	A312 A313
HUNTER LOOP COMMUNICATIONS FACILITY	LEZN	MONTGOMERY	MONTGOMERY	3 307	315	A315
MARTIN AIR NATIONAL GUARD STATION	PJFS	ETOWAH	CADSDEN	3 307	315	A315
MAXWELL AIR FORCE BASE	PNGS	MONTGOMERY	MONTGOMERY	3 307	315	A315
MAXWELL FAMILY HOUSING ANNEX	PNGY	MONTGOMERY	MONTGOMERY	3 307	315	A315
VAIDEN AIR FORCE AUXIL AIRFIELD	XRJW	PERRY		3 307	315	A315

TABLE 2
AIR FORCE INSTALLATIONS
STATE - AR

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
BLYTHEVILLE AIR FORCE BASE	BWKR	MISSISSIPPI		8 801	802 81-16	
HOT SPRING MEMORIAL FIELD ANG	PYGY	GARLAND		8 802	804	
HOT SPRINGS FAMILY HOUSING SITE	LBUS	GARLAND		8 802	804	
FORT SMITH MUNICIPAL AIRPORT ANG	HKRZ	SEBASTIAN	FORT SMITH	11 1104	1111 AA-3	BA-5
LITTLE ROCK AIR FORCE BASE	NKAK	PULASKI	LITTLE ROCK-NORTH LITTLE ROCK	11 1104	1111 AA-3	BA-6

STATE - AZ

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
AIR FORCE PLANT NO.44	ACHA	PIMA	TUCSON	15 1503	1504 A0-1	A0-2 A3-6
COOLIDGE FLORENCE MUNICIPAL AIRPORT	EKGP	PINAL	TUCSON	15 1503	1504 A0-1	A0-2 A3-6
DAVIS MONTHAN AIR FORCE BASE	FBNV	PIMA	TUCSON	15 1503	1504 A0-1	A0-2 A3-6
GILA SEND AIR FORCE AUX FIELD	HXCZ	MARICOPA	PHOENIX	15 1503	1505 A0-1	A0-2 A3-4
HOLBROOK RADAR BOMB SCORING SITE	KVXH	NAVAJO	PHOENIX	15 1501	1501 A0-1	A0-2 A3-4
LUKE AIR FORCE AUX FIELD 01	NUEF	MARICOPA	PHOENIX	15 1503	1505 A0-1	A0-2 A3-4
LUKE AIR FORCE BASE	NUEX	MARICOPA	PHOENIX	15 1503	1505 A0-1	A0-2 A3-4
LUKE AIR FORCE RANGE	NURD	MARICOPA	PHOENIX	15 1503	1505 A0-1	A0-2 A3-4
RITTENHOUSE AIR FORCE AUXILIARY FIELD	UGES	PINAL	TUCSON	15 1503	1504 A0-1	A0-2 A3-6
SANUARITA AIR FORCE RANGE	UOR8	PIMA	PHOENIX	15 1503	1505 A0-1	A0-2 A3-6
SKY HARBOR INTERNATIONAL AIRPORT	VTNB	MARICOPA	TUCSON	15 1503	1504 A0-1	A0-2 A3-6
TUCSON INTERNATIONAL AIRPORT	XHEA	PIMA	PHOENIX	15 1503	1504 A0-1	A0-2 A3-6
WILLIAMS AIR FORCE BASE	YZJU	MARICOPA	PHOENIX	15 1503	1505 A0-1	A0-2 A3-6

TABLE 2

AIR FORCE INSTALLATIONS

STATE - CA

INSTALLATION	CODE	COUNTY	SMSA	REG	ASR	SREG	PROBLEMS
AIR FORCE PLANT NO. 19	ACFZ	SAN DIEGO	SAN DIEGO	18	1806	1808	B062 B063
ALMADEN AIR FORCE STATION	AFSA	SANTA CLARA	SAN JOSE	18	1804	1806	
ALMADEN COMMUNICATIONS FACILITY ANNEX	AFSC	SANTA CLARA	SAN JOSE	18	1804	1806	
ALMADEN FAMILY HOUSING ANNEX	AFUX	SANTA CLARA	SAN JOSE	18	1804	1806	
BEALE AIR FORCE BASE	RAEY	YUBA		18	1802	1802	A021
CAMBRIA AIR FORCE STATION	CXRT	SAN LUIS OBISPO		18	1805	1807	
CAMBRIA FAMILY HOUSING ANNEX	CXSF	SAN LUIS OBISPO		18	1805	1807	
CAMP PARKS COMMUNICATIONS ANNEX	ETQJ	ALAMEDA		18	1804	1806	B042
CARSON FAMILY HOUSING SITE	DDNS	LOS ANGELES	SAN FRANCISCO-OAKLAND	18	1806	1808	B062
CASTLE AIR FORCE BASE	DESR	MERCED	LOS ANGELES-LONG BEACH	18	1803	1804	A031
CASTLE FAMILY HOUSING ANNEX NO. 3	DFCT	MERCED		18	1803	1804	A031
CATCO HOUSING ANNEX NO. 2	DPXA	MERCED		18	1803	1804	A031
CATCO RESEARCH SITE	DPXR	BUTTE		18	1802	1802	A021
COMPTON ANG STATION	EGBZ	LOS ANGELES	LOS ANGELES-LONG BEACH	18	1806	1808	B062
COYOTE FLATS AIR STRIP	EQUC	INYO		18	1807	1809	
CUDEBACK DRY LAKE TEST ANNEX	EYCZ	SAN BERNARDINO	RIVERSIDE-SAN BERNARDINO-ONTARIO	18	1806	1808	
EDWARDS AIR FORCE BASE	FSPM	KERN	BAKERSFIELD	18	1803	1803	
FREMONT FAMILY HOUSING SITE	HALJ	ALAMEDA	SAN FRANCISCO-OAKLAND	18	1804	1806	B042
FRESNO ANG BASE	HAYW	FRESNO	FRESNO	18	1803	1803	A031
GEORGE AIR FORCE BASE	HUUA	SAN BERNARDINO	RIVERSIDE-SAN BERNARDINO-ONTARIO	18	1806	1808	
HAYWARD MUNICIPAL AIRPORT ANG	KJGW	ALAMEDA	SAN FRANCISCO-OAKLAND	18	1804	1806	B042
KLAMATH AIR FORCE STATION	MJLV	DEL NORTE		18	1801	1801	
LINCOLN COMMUNICATIONS ANNEX	NFYL	PLACER	SACRAMENTO	18	1802	1802	A021
LOS ANGELES AFOTC FAMILY HOUSING SITE	NSAH	LOS ANGELES	LOS ANGELES-LONG BEACH	18	1806	1808	B062
LOS ANGELES AIR FORCE ANNEX NR. 1	NSAS	LOS ANGELES	LOS ANGELES-LONG BEACH	18	1806	1808	B062
LOS ANGELES AIR FORCE STATION	ACJP	LOS ANGELES	LOS ANGELES-LONG BEACH	18	1806	1808	B062
LOS ANGELES BACHELOR HSG SITE	NRZU	LOS ANGELES	LOS ANGELES-LONG BEACH	18	1806	1808	B062
LOS ANGELES RECRUITING FAM HSG SITE	PCZP	RIVERSIDE	LOS ANGELES-LONG BEACH	18	1806	1808	B062
MARCH AIR FORCE BASE	QKFN	RIVERSIDE	RIVERSIDE-SAN BERNARDINO-ONTARIO	18	1806	1808	B061 B062
MARCH COMMUNICATIONS ANNEX NO. 2	PDNE	RIVERSIDE	RIVERSIDE-SAN BERNARDINO-ONTARIO	18	1806	1808	B061 B062
MARCH COMMUNICATIONS FACILITY ANNEX	PLXL	SACRAMENTO	RIVERSIDE-SAN BERNARDINO-ONTARIO	18	1806	1808	B061 B062
MCCLELLAN ADMINISTRATIVE ANNEX	PRKA	BUTTE	SACRAMENTO	18	1802	1802	A021
MCCLELLAN AIR FORCE BASE	PRJY	SACRAMENTO	SACRAMENTO	18	1802	1802	A021
MCCLELLAN FAMILY HOUSING ANNEX	PRXL	SACRAMENTO	SACRAMENTO	18	1802	1802	A021
MCCLELLAN STORAGE ANNEX	ACJB	SACRAMENTO	SACRAMENTO	18	1802	1802	A021
MILL VALLEY AIR FORCE STATION	GGDL	MARTIN	SAN FRANCISCO-OAKLAND	18	1802	1802	A021
MT LAGUNA AIR FORCE STATION	GZUX	SAN DIEGO	SAN DIEGO	18	1804	1806	B062
MT LAGUNA FAMILY HOUSING ANNEX	GZUA	SAN DIEGO	SAN DIEGO	18	1806	1808	B062 B063
NORTH HIGHLANDS AIR NATIONAL GUARD	RZJG	SACRAMENTO	SACRAMENTO	18	1802	1802	A021

TABLE 2

AIR FORCE INSTALLATIONS

STATE - CA

INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
NORTH AIR FORCE BASE	SCFY	SAN BERNARDINO	RIVERSIDE-SAN BERNARDINO-ONTARIO	18 1806 1808 8061 8062
NORTON COMMUNICATIONS FACILITY ANNEX	SCGM	SAN BERNARDINO	RIVERSIDE-SAN BERNARDINO-ONTARIO	18 1806 1808 8061 8062
ONTARIO INTERNATIONAL AIRPORT ANG	SKKA	SAN BERNARDINO	RIVERSIDE-SAN BERNARDINO-ONTARIO	18 1806 1808 8061 8062
PILLAR POINT MISSILE TRACKING SITE NO 1	TFWY	SAN MATEO	SAN FRANCISCO-OAKLAND	18 1804 1806 8042
POINT ARENA AIR FORCE STATION	TKGP	MENDOCINO		18 1801 1801
PRODUCTION FLIGHT TEST INSTL AF PLT 42	TTQK	LOS ANGELES	LOS ANGELES-LONG BEACH	18 1806 1808 8062
SAN PEDRO HILL AIR FORCE STATION	UUMY	LOS ANGELES	LOS ANGELES-LONG BEACH	18 1806 1808 8062
SAN PEDRO HILL FAMILY HOUSING ANNEX	UULY	LOS ANGELES	LOS ANGELES-LONG BEACH	18 1806 1808 8062
SEPULVEDA HILL NATIONAL GUARD STATION	VHRJ	LOS ANGELES	LOS ANGELES-LONG BEACH	18 1806 1808 8062
SUNNYVALE AIR FORCE STATION	WMSJ	SANTA CLARA	SAN JOSE	18 1804 1806 8041
SUNNYVALE FAMILY HOUSING SITE	WMSB	SANTA CLARA	SAN JOSE	18 1804 1806 8041
TRAVIS AIR FORCE BASE	XDAT	SOLANO	VALLEJO-FAIRFIELD-NAPA	18 1804 1806 8042
VAN NUYS AIRPORT ANG	XTBT	LOS ANGELES	LOS ANGELES-LONG BEACH	18 1806 1808 8062
VAN NUYS FAMILY HOUSING SITE	XTBY	LOS ANGELES	LOS ANGELES-LONG BEACH	18 1806 1808 8062
VANDENBERG AIR FORCE BASE	XUMU	SANTA BARBARA	SANTA BARBARA-SANTA MARIA-LOMPOC	18 1805 1807

STATE - CO

INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
BOULDER BACHELOR MSG SITE	CRKK	BOULDER	DENVER-BOULDER	10 1007 1019 821
BUCKLEY AIR NATIONAL GUARD BASE	CRWU	ARAPAHOE	DENVER-BOULDER	10 1007 1019 821
LONGMONT FAMILY HOUSING SITE	NGFW	BOULDER	DENVER-BOULDER	10 1007 1019 821
LORRY AIR FORCE BASE	NTMU	DENVER	DENVER-BOULDER	10 1007 1019 821
LORRY TRAINING ANNEX	NTNB	ARAPAHOE	DENVER-BOULDER	10 1007 1019 821
LA JUNTA RADAR BOMB SCORING SITE	MNDJ	OTERO		11 1102 1102 AC-2
LAMAR COMMUNICATIONS FACILITY ANNEX	MSTH	PROMERS		11 1102 1102 AC-2
LAMAR FAMILY HOUSING ANNEX	MSNU	PROMERS		11 1102 1102 AC-2
NORAD COMBAT OPERATIONS CENTER	9AXC	EL PASO		11 1102 1102 AC-1
PETERSON AIR FORCE BASE	TDKA	EL PASO		11 1102 1102 AC-1
PETERSON FAMILY HOUSING ANNEX	TDHW	EL PASO		11 1102 1102 AC-1
US AIR FORCE ACADEMY	XGPZ	EL PASO		11 1102 1102 AC-1

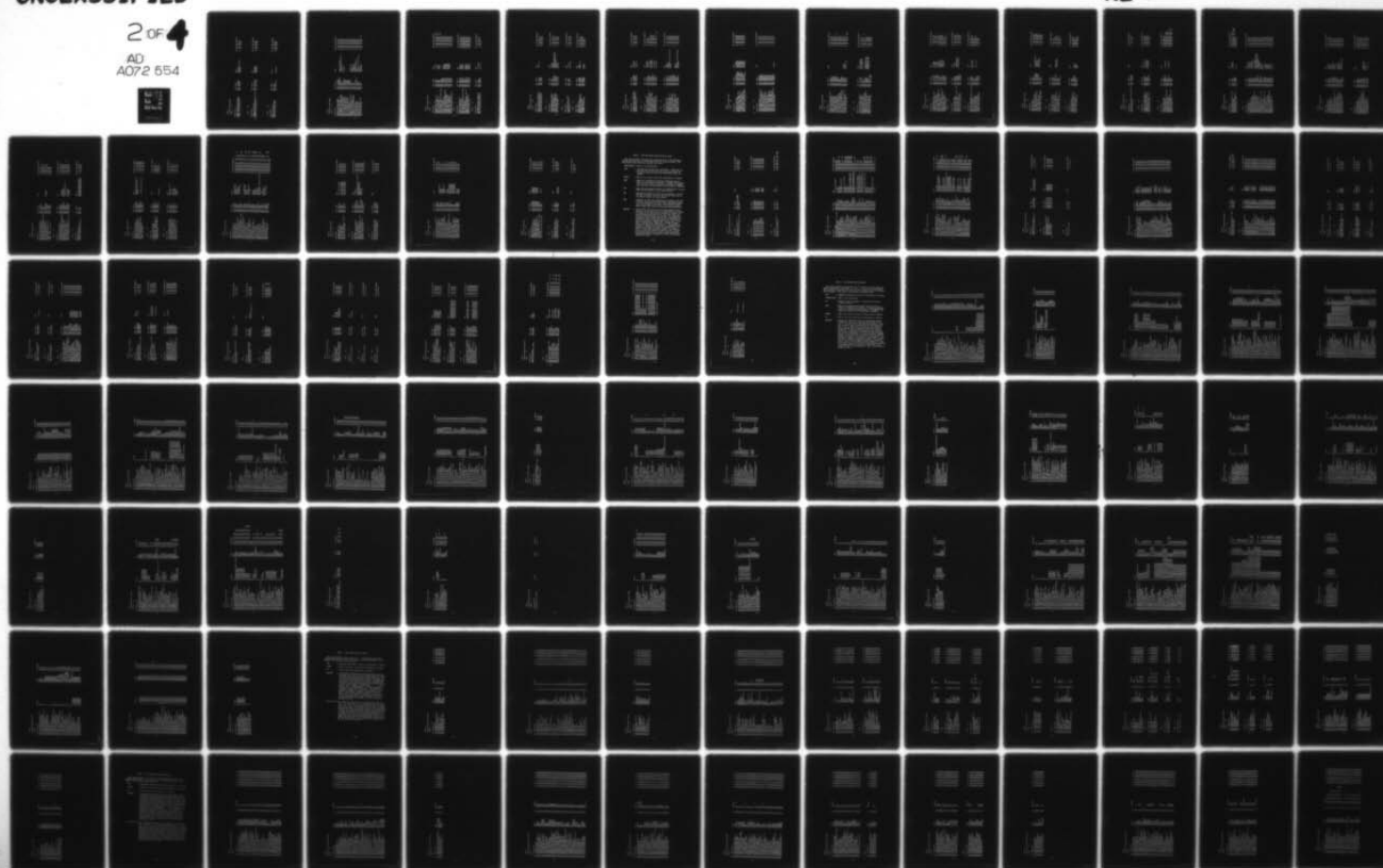
AD-A072 554

NATIONAL DEFENSE UNIV WASHINGTON DC RESEARCH DIRECTORATE F/G 13/2
CURRENT AND PROJECTED WATER RESOURCES PROBLEMS AND THEIR IMPACT--ETC(U)
MAY 79 R D SCHWARTZ

UNCLASSIFIED

NL

2 of 4
AD
A072 554



AD
A072 554

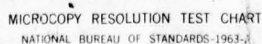


TABLE 2
AIR FORCE INSTALLATIONS
STATE - CT

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
BRADLEY INTERNATIONAL AIRPORT	CEKT	HARTFORD	HARTFORD	1	105	108 816
ORANGE ANG COMMUNICATION STATION	SKXJ	NEW HAVEN	NEW HAVEN-WEST HAVEN	1	104	107 816
STORRS BACHELOR HOUSING SITE	WJRR	TOLLAND	HARTFORD	1	104	107 819

STATE - DC

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
BOLLING AIR FORCE BASE	BXUR	DIST OF COL	WASHINGTON	2	206	207 822
CHESAPEAKE STREET OFFICER HOUSING ANNEX	DNQR	DIST OF COL	WASHINGTON	2	206	207 822
WILBURN FAMILY HOUSING ANNEX	YYLU	DIST OF COL	WASHINGTON	2	206	207 822

STATE - DE

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
DOVER AIR FORCE BASE	FJXT	KENT	WILMINGTON	2	203	204 810
DOVER FAMILY HOUSING ANNEX	PKJC	KENT	WILMINGTON	2	203	204 810
GREATER WILMINGTON AIRPORT	JLWS	NEW CASTLE	WILMINGTON	2	203	204 810

TABLE 2
AIR FORCE INSTALLATIONS
STATE - FL

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
AVON PARK AIR FORCE RANGE	ASPR	HIGHLANDS		3	305	309 A309
AVON PARK AUXILIARY AIRFIELD	ASPO	HIGHLANDS		3	305	309 A309
BRANDON MEDICAL FOOD ANX	CFGH	HILLSBOROUGH	TAMPA-ST PETERSBURG	3	304	310 A310
CAPE CANAVERAL AIR FORCE STATION	DBCH	BREVARD	MELBOURNE-TITUSVILLE-COCOA	3	304	308 A308
COVE GARDENS FAMILY HOUSING ANNEX	EYDC	BAY	PANAMA CITY	3	307	314 A314
CUDJOE KEY AIR FORCE STATION	EYDZ	MONROE		3	305	309 A309
EGLIN AF AUXILIARY FIELD NO 10	FTEW	SANTA ROSA	PENSACOLA	3	307	314 A314
EGLIN AF AUXILIARY FIELD NO 2	FTEP	OKALOOSA		3	307	314 A314
EGLIN AF AUXILIARY FIELD NO 3	FTEP	OKALOOSA		3	307	314 A314
EGLIN AF AUXILIARY FIELD NO 6	FTEP	OKALOOSA		3	307	314 A314
EGLIN AF AUXILIARY FIELD NO 9	FTFA	OKALOOSA		3	307	314 A314
EGLIN AIR FORCE BASE	FTFA	OKALOOSA		3	307	314 A314
GAINESVILLE AFROTC FAMILY HSG SITE	HPKU	ALACHUA	GAINESVILLE	3	304	311 A311
HOMESTEAD AIR FORCE BASE	KYJL	DADE	MIAMI	3	305	309 A309
JACKSONVILLE AIR FORCE STATION	LSCC	CLAY	JACKSONVILLE	3	304	308 A308
JACKSONVILLE FAMILY HOUSING ANNEX	LSCG	CLAY	JACKSONVILLE	3	304	308 A308
JACKSONVILLE IAP ANG	NSGR	DUVAL	JACKSONVILLE	3	304	308 A308
MACDILL AIR FORCE BASE	NVZR	HILLSBOROUGH	TAMPA-ST PETERSBURG	3	304	310 A310
MIAMI BACHELOR HSG SITE	QCEF	DADE	MIAMI	3	305	309 A309
PATRICK AIR FORCE BASE	SMHT	BREVARD	MELBOURNE-TITUSVILLE-COCOA	3	304	308 A308
RICHMOND AF STATION	UEPE	DADE	MIAMI	3	305	309 A309
TALLAHASSEE BACHELOR HSG SITE	WRDK	LEON	TALLAHASSEE	3	306	312 A312
TYNDALL AIR FORCE BASE	XLWU	BAY	PANAMA CITY	3	307	314 A314

TABLE 2
AIR FORCE INSTALLATIONS
STATE - GA

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
AIR FORCE PLANT NO 6	ACFL	COBB	ATLANTA	3 306	313	A312 A313
BRUNSWICK FAMILY HOUSING SITE	CBJU	GLYNN	ATLANTA	3 303	307	A307 A313
DOBBS AIR FORCE BASE	FCMB	COBB	ATLANTA	3 306	313	A312 A313
LEWIS & WILSON AIRPORT ANG	EZAP	B188	MACON	3 303	307	A307 A313
MCCOLLUM ANG STATION	PRNG	COBB	ATLANTA	3 306	313	A312 A313
MCKINNON AIRPORT COMMUNICATIONS STATION	PUNW	GLYNN		3 303	307	A307 A313
MOODY AIR FORCE BASE	QSEU	LOWNDES	MACON	3 304	311	A311
ROBINS AIR FORCE BASE	UHZJ	HOUSTON	MACON	3 303	307	A307 A313
SAVANNAH AIR FORCE STATION	UZYJ	CHATHAM	SAVANNAH	3 303	306	A306 A313
SAVANNAH ANG COMMUNICATIONS STATIONS	UXXM	CHATHAM	SAVANNAH	3 303	306	A306 A313
SAVANNAH ANG MUNICIPAL AIRPORT	XQOU	CHATHAM	SAVANNAH	3 303	306	A306 A313
SAVANNAH BACHELOR HOUSING ANG	UXZU	CHATHAM	SAVANNAH	3 303	306	A306 A313
SAVANNAH FAMILY HOUSING ANG	UXXS	CHATHAM	SAVANNAH	3 303	306	A306 A313
SAVANNAH FAMILY HOUSING SITE	UXZT	CHATHAM	SAVANNAH	3 303	306	A306 A313
SPENCE AF AUXILIARY FIELD	VYUK	COLQUITT	SAVANNAH	3 304	311	A311
STATESBORO RADAR BOMB SCORING SITE	WFJY	BULLOCH		3 303	306	A306 A313

A-28

STATE - HI

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
BELLOWS AIR FORCE STATION	RFMV	HONOLULU	HONOLULU	20 2003	2006	86-2
HICKAM AIR FORCE BASE	KNMD	HONOLULU	HONOLULU	20 2003	2006	86-4
KAAIA AIR FORCE STATION	QZSX	HONOLULU	HONOLULU	20 2003	2006	86-6
KAENA POINT SATELLITE TRACKING STATION	LXHY	HONOLULU	HONOLULU	20 2003	2006	86-5
KORKEE AIR FORCE STATION	MKPP	KAUAI		20 2004	2007	87-5
KUNIA COMMUNICATION	MLVK	HONOLULU	HONOLULU	20 2003	2006	86-6
PALAHUA AF SOLAR OBSERVATORY RSCH SITE	STOS	HONOLULU	HONOLULU	20 2003	2006	86-3
PUNAHONO AIR FORCE STATION	TUUK	HONOLULU	HONOLULU	20 2003	2006	86-1
WAIHANA COMMUNICATION STATION	WPKY	HONOLULU	HONOLULU	20 2003	2006	86-6
WHEELER AIR FORCE BASE	YVEM	HONOLULU	HONOLULU	20 2003	2006	86-4

STATE - IA

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
DES MOINES MUNICIPAL AIRPORT ANG	FFAN	POLK	DES MOINES	7 703	709	A34
FORT DODGE AIR NATIONAL GUARD	HEMT	WEBSTER		7 703	709	A34
STIOUX CITY MUNICIPAL AIRPORT ANG	VSSB	WOODBURY	STIOUX CITY	10 1009	1023	

TABLE 2

AIR FORCE INSTALLATIONS

STATE - ID

INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
BOISE AIR TERMINAL (GOWEN FIELD)	BXRH	ADA	BOISE CITY	17 1703 1706 A3
MOUNTAIN HOME AIR FORCE BASE	QYZH	ELMORE		17 1703 1706 A3
SAYLOR CREEK AIR FORCE RANGE	VAPM	ONYMEE		17 1703 1706 A3
WILDER RADAR BOMB SCORING SITE	YYSG	CANYON		17 1703 1706 A3

STATE - IL

INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
CHICAGO-OMARE FAMILY HSG SITE	DPLJ	COOK	CHICAGO	4 403 404 A9
O HARE INTERNATIONAL AIRPORT	DPNB	COOK	CHICAGO	4 403 404 A9
CHANUTE AIR FORCE BASE	DJDB	CHAMPAIGN	CHAMPAIGN-URBANA-RANTOUL	5 506 513 A14
CHARUTE FAMILY HOUSING ANNEX	DJDX	CHAMPAIGN	CHAMPAIGN-URBANA-RANTOUL	5 506 513 A14
CAPITAL MUNICIPAL AIRPORT ANG	DCFT	SANGAMON	SPRINGFIELD	7 704 713 B7
GREATER PEORIA AIRPORT ANG	JLON	PEORIA	PEORIA	7 704 713 A9
SCOTT AIR FORCE BASE	VDYD	ST CLAIR	ST LOUIS	7 705 714 A3

STATE - IN

INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
FT WAYNE MUNICIPAL AIRPORT	ATQZ	ALLEN	FT WAYNE	4 406 410 A18
GRISCOM AIR FORCE BASE	CTGC	MIAMI		5 506 513 A14
HULMAN FIELD	LDXF	VIGO	TERRE HAUTE	5 506 513 A14

STATE - KS

INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
FORBES FIELD ANG	GUGE	SHAWNEE	TOPEKA	10 1010 1027
OLATHE FAMILY HOUSING SITE	SHMV	JOHNSON	KANSAS CITY	10 1011 1030 B28
SCHILLING FAMILY HOUSING SITE	VBLM	SALINE		10 1010 1026 B27
SHOKY HILL ANG RANGE	VUVB	SALINE		10 1010 1026 B27
AIR FORCE PLANT NO 13	ACFS	SEDGWICK	WICHITA	11 1103 1103
MCCONNELL AIR FORCE BASE	PROE	SEDGWICK	WICHITA	11 1103 1103

TABLE 2

AIR FORCE INSTALLATIONS

STATE - KY

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
LOUISVILLE FAMILY HOUSING ANNEX	NSOP	JEFFERSON	LOUISVILLE	5	505	511 A15
LOUISVILLE FAMILY HOUSING SITE	NSOG	JEFFERSON	LOUISVILLE	5	505	511 A15
RICHMOND RADAR BOMB SCORING SITE	UESE	MADISON		5	505	510 A13
STANDIFORD FIELD ANG	WEAS	JEFFERSON	LOUISVILLE	5	505	511 A15

STATE - LA

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
CLAIBORNE AIR FORCE RANGE	ERNM	RAPIDES	ALEXANDRIA	8	802	804
ENGLAND AIR FORCE BASE	GAMH	RAPIDES	ALEXANDRIA	8	802	804
HAMMOND ANG COMMUNICATION STATION	KAFF	TANGIPAHOA		8	803	807
JACKSON BARRACKS ANG STATION	LSBC	ORLEANS	NEW ORLEANS	8	803	809 A3-1
KEESLER OFFICER HOUSING ANNEX	MAHZ	ORLEANS	NEW ORLEANS	8	803	809 A3-1
LAKE CHARLES AIR FORCE STATION	MQTF	CALCASTEU	LAKE CHARLES	8	803	808 A3-7
NEW ORLEANS NAS ANG	RQLA	PLAQUEMINES		8	803	809 A3-1
NEW ORLEANS OLCA OFFICE	RQLA	ORLEANS	NEW ORLEANS	8	803	809 A3-1
RUSTON BACHELOR HSG SITE	UPBC	LINCOLN		8	802	804
BARKSDALE AIR FORCE BASE	AWUB	BOSSIER	SHREVEPORT	11	1107	1114 AL-1 BL-2

STATE - MA

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
AIR FORCE PLANT NO 28	ACGJ	MIDDLESEX	BOSTON	1	103	106 B11
AIR FORCE PLANT NO 29	ACGX	ESSEX	BOSTON	1	103	106 B11
AIR FORCE PLANT NO 63	ACHU	WORCESTER	WORCESTER	1	103	106 B13
BARNES MUNICIPAL AIRPORT ANG	AXQD	HAMPDEN	SPRINGFIELD-CHICOPEE-HOLYOKE	1	105	108 B16
HANSCOM AIR FORCE BASE	MXRD	MIDDLESEX	BOSTON	1	103	106 B11
NO TRURO FAMILY HOUSING ANX	SAHX	BARNSTABLE		1	103	106 B11
NORTH TRURO AIR FORCE STATION	SAHW	BARNSTABLE		1	103	106 B11
OTIS AIR FORCE BASE	SPBN	BARNSTABLE		1	103	106 B11
WALTHAM FEDERAL CENTER ANNEX	YJSZ	MIDDLESEX	BOSTON	1	103	106 B11
WELLESLEY ANG STATION	YRLZ	NORFOLK	BOSTON	1	103	106 B11
WESTOVER AIR FORCE BASE	YTPM	HAMPDEN	SPRINGFIELD-CHICOPEE-HOLYOKE	1	105	108 B16
WORCESTER ANG STATION	ZMAH	WORCESTER	WORCESTER	1	103	106 B13

TABLE 2

AIR FORCE INSTALLATIONS

STATE - MD

INSTALLATION	STATE	CODE	COUNTY	SMSA	REG	ASR	SREG	PROBLEMS
AIR FORCE PLANT NO 50	MD	ACHG	BALTIMORE	BALTIMORE	2	205	206	818
ANDREWS AIR FORCE BASE	MD	AJXF	PRINCE GEORGES	WASHINGTON	2	206	207	822
BRANDYME FAMILY HOUSING ANNEX	MD	CFJN	PRINCE GEORGES	WASHINGTON	2	204	207	822
BRANDYME GLOBECOM ANNEX	MD	CFJG	PRINCE GEORGES	WASHINGTON	2	206	207	822
DAVIDSONVILLE FAMILY HOUSING ANNEX	MD	FBJS	ANNE ARUNDEL	BALTIMORE	2	205	206	818
FT MEADE FAMILY HOUSING ANNEX	MD	HHY	PRINCE GEORGES	WASHINGTON	2	206	207	822
GOVERNORS BRIDGE GLOBECOM ANNEX	MD	JEBX	ANNE ARUNDEL	BALTIMORE	2	205	206	818
MARTIN AIRPORT AIR NATIONAL GUARD	MD	PJMS	BALTIMORE	BALTIMORE	2	205	206	818
SUITLAND HALL ADMINISTRATION ANNEX	MD	WLNP	PRINCE GEORGES	WASHINGTON	2	206	207	822

STATE - ME

INSTALLATION

INSTALLATION	STATE	CODE	COUNTY	SMSA	REG	ASR	SREG	PROBLEMS
BANGOR HOUSING SITE 3	ME	FKPC	PENOBSCOT		1	101	102	A3
BANGOR INTERNATIONAL AIRPORT (ANG)	ME	PKNN	PENOBSCOT		1	101	102	A3
BANGOR AIR FORCE STATION	ME	CRYU	WASHINGTON		1	101	101	A2
SUCKS HARBOR FAMILY HOUSING ANNEX	ME	CRYV	WASHINGTON		1	101	101	A2
CASWELL AIR FORCE STATION	ME	AFJT	ARROOSTOOK		1	101	101	A1
CHARLESTON AIR FORCE STATION	ME	DKBB	PENOBSCOT		1	101	102	A3
CHARLESTON FAMILY HOUSING ANNEX	ME	DKBC	PENOBSCOT		1	101	102	A3
LORING AIR FORCE BASE	ME	NRCH	ARROOSTOOK		1	101	101	A1
LORING FAMILY HOUSING ANNEX	ME	NRCH	ARROOSTOOK		1	101	101	A1
LORING FAMILY HOUSING ANNEX NO 2	ME	NRCW	ARROOSTOOK		1	101	101	A1
LORING FAMILY HOUSING ANNEX NO 3	ME	NRCX	ARROOSTOOK		1	101	101	A1
LORING FAMILY HOUSING ANNEX NO 4	ME	NRCY	ARROOSTOOK		1	101	101	A1
LORING FAMILY HOUSING ANNEX NO 5	ME	NRCZ	ARROOSTOOK		1	101	101	A1
LOUIS BLOTNER RADAR BOMB SCORING SITE	ME	NSNK	ARROOSTOOK		1	101	101	A1
SOUTH PORTLAND ANG STATION	ME	VVRK	CUMBERLAND	PORTLAND	1	102	104	A7

TABLE 2

AIR FORCE INSTALLATIONS

STATE - MI

INSTALLATION	CODE	COUNTY	SM3A	REG	ASR	SREG	PROBLEMS
BAYSHORE RADAR BOMB SCORING SITE	AZME	EMMET		4	404	406	A13
CALUMET AIR FORCE STATION	CXJG	KEMENAM		4	401	402	A4
CALUMET FAMILY HOUSING ANX	CXJJ	KEMENAM		4	401	402	A4
EMPIRE AIR FORCE STATION	FZXD	LEELANAU		4	404	406	A13
EMPIRE FAMILY HOUSING ANX	FZXE	LEELANAU		4	404	406	A13
K I SAWYER AIR FORCE BASE	LWRC	MARQUETTE		4	401	402	A4
KINCHELOE AIR FORCE BASE	MEMM	CHIPPewa		4	401	402	A4
PHELPS COLLINS AIRPORT ANG	TOVG	ALPENA		4	405	407	A13
PORT AUSTIN AIR FORCE STATION	TNHP	HURON		4	405	408	A15
PORT AUSTIN FAMILY HOUSING ANX	TNHP	HURON		4	405	408	A15
SAULT STE MARIE AIR FORCE STATION	U2LM	CHIPPewa		4	401	402	A4
SAULT STE MARIE COMM FACILITY ANNEX	NZLT	CHIPPewa		4	401	402	A4
SELFRIDGE ANG BASE	VGLZ	MACOMB	DETROIT	4	406	409	A16
SELFRIDGE FAMILY HOUSING ANNEX NO 2	VGMN	MACOMB	DETROIT	4	406	409	A16
WM KELLOGG REGIONAL AIRFIELD	MMNV	CALHOUN	BATTLE CREEK	4	404	405	A10
MURTSMITH AIR FORCE BASE	ZJXD	IOSCO		4	405	408	A13

STATE - MN

INSTALLATION	CODE	COUNTY	SM3A	REG	ASR	SREG	PROBLEMS
DULUTH AIR NATIONAL GUARD BASE	FMLH	ST LOUIS		4	401	401	A2
DULUTH FAMILY HOUSING ANNEX	FMLD	ST LOUIS	DULUTH-SUPERIOR	4	401	401	A2
DULUTH INTERNATIONAL AIRPORT	FMLH	ST LOUIS	DULUTH-SUPERIOR	4	401	401	A2
FINLAND AIR FORCE STATION	GGWL	LAKE		4	401	401	A1
MINNEAPOLIS AFOTC FAM HSG SITE	QJNV	RICE		7	702	705	
MINNEAPOLIS FAMILY HOUSING SITE	QKNW	HENNEPIN	MINNEAPOLIS-ST PAUL	7	701	702	B23
MINNEAPOLIS RECRUITING FAM HSG SITE	QJNC	HENNEPIN	MINNEAPOLIS-ST PAUL	7	701	702	B23
MINNEAPOLIS ST PAUL INTL APT	QJKL	HENNEPIN	MINNEAPOLIS-ST PAUL	7	701	702	B23
ROSEVILLE BACHELOP HSG SITE	UMHM	RAMSEY	MINNEAPOLIS-ST PAUL	7	701	702	B23
SAUDETTA AIR FORCE STATION	AZCZ	LAKE OF WOOD		9	901	903	A27
SAUDETTA FAMILY HOUSING ANNEX	AZOM	LAKE OF WOOD		9	901	903	A27

TABLE 2

AIR FORCE INSTALLATIONS

STATE - MO

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
AIR FORCE PLANT NO 84	ACJT	ST LOUIS	ST LOUIS	7	705	714 A3
JEFFERSON BARRACKS ANG STATION	LTUY	ST LOUIS	ST LOUIS	7	705	714 A3
LAMBERT ST LOUIS IAP ANG	MSQB	ST LOUIS	ST LOUIS	7	705	714 A3
ST LOUIS AIR FORCE STATION	ACBF	ST LOUIS	ST LOUIS	7	705	714 A3
ST LOUIS FAMILY HOUSING ANX	LTUT	ST LOUIS	ST LOUIS	7	705	714 A3
WEBSTER GROVES FAMILY HOUSING SITE	YQPY	ST LOUIS	ST LOUIS	7	705	714 A3
BELTON COMM FACILITY ANNEX	BFMD	JACKSON	KANSAS CITY	10	1011	1030 B28
BELTON TRAINING ANNEX	JGVC	CASS	KANSAS CITY	10	1011	1030 B28
KANSAS CITY RECRUITING FAM HSG SITE	LYNL	JACKSON	KANSAS CITY	10	1011	1030 R28
RICHARDS GEBAR AIR FORCE BASE	UEBL	JACKSON	KANSAS CITY	10	1011	1030 B28
ROSECRANS MEMORIAL AIRPORT	ULYB	BUCHANAN	KANSAS CITY	10	1009	1024
WHITEMAN AIR FORCE BASE	YHMG	JOHNSON	ST JOSEPH	10	1011	1030
AIR FORCE PLANT NO 65	ACHW	NEWTON		11	1104	1107 AM-2

STATE - MS

INSTALLATION

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
ALLEN C THOMPSON FIELD	LRXQ	RANKIN	JACKSON	3	309	318 A319
COLUMBUS AIR FORCE BASE	EEPZ	LOWNDES		3	308	316 A316A
GULFPORT MAP ANG PERMANENT TRAINING BASE	JTVE	HARRISON	GULFPORT-BILOXI	3	309	317 A317
KEESLER AIR FORCE BASE	MAMG	HARRISON	GULFPORT-BILOXI	3	309	317 A317
KEESLER TRAINING ANNEX NO 1	MAYA	HARRISON	GULFPORT-BILOXI	3	309	317 A317
KEY FIELD AIR NATIONAL GUARD	MDVL	LAUDERDALE		3	309	317 A317
MERIDIAN FAMILY HOUSING SITE	GALF	LAUDERDALE		3	309	317 A317

STATE - MT

INSTALLATION

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
GLASGOW AIR FORCE BASE	HYTF	VALLEY		10	1001	1005
GREAT FALLS COMMUNICATIONS FACILITY SITE	JKRY	CASCADE	GREAT FALLS	10	1002	1003 B12
GREAT FALLS IAP ANG	JKSE	CASCADE	GREAT FALLS	10	1002	1003 B12
HAYRE AIR FORCE STATION	KHEC	HILL		10	1001	1005
HAYRE FAMILY HOUSING ANX	KHEN	HILL		10	1001	1005
MALMSTROM AIR FORCE BASE	NZAS	CASCADE	GREAT FALLS	10	1002	1003 B12
OPHEIM AIR FORCE STATION	SKRN	VALLEY		10	1001	1005
KALISPELL AIR FORCE STATION	LXTH	FLATHEAD		17	1701	1702
KALISPELL FAMILY HOUSING ANNEX	LXTT	FLATHEAD		17	1701	1702

TABLE 2

AIR FORCE INSTALLATIONS

STATE - NC

INSTALLATION

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
BADIN ANG STATION	ATNV	STANLY		3	302	304 A304
DARE COU TY RANGE	SUYA	DARE		3	301	301 A301B
DOUGLAS MUNICIPAL AIRPORT	FJRP	MECHLENBURG	CHARLOTTE-GASTONIA	3	302	305 A305A
FORT FISHER AIR FORCE STATION	HEVT	NEW HANOVER	WILMINGTON	3	301	303 A303
FORT FISHER FAMILY HOUSING ANX	HEVU	NEW HANOVER	WILMINGTON	3	301	303 A303
POPE AIR FORCE BASE	TMKH	CUMBERLAND	FAYETTEVILLE	3	301	303 A303
RALEIGH BACHELOR HSG SITE	TWZS	WAKE	RALEIGH-DURHAM	3	301	302 A302
RUANOKA RAPIDS AIR FORCE STATION	UHDZ	HALIFAX		3	301	302 A302
SEYMOUR JOHNSON AIR FORCE BASE	VKAG	WAYNE		3	301	302 A302

STATE - ND

INSTALLATION

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
FINLEY AIR FORCE STATION	GOYZ	STEELE		9	901	902
FINLEY FAMILY HOUSING ANNEX	GOZM	STEELE		9	901	902
FORTUNA AIR FORCE STATION	GWRP	DIVIDE		9	901	901 B1
GRAND FORKS AIR FORCE BASE	JFSD	GRAND FORKS	GRAND FORKS	9	901	902 A16
HECTOR FIELD AIR NATIONAL GUARD	KKGA	CASS	FARGO-MOORHEAD	9	901	902 A9
MINOT AIR FORCE BASE	QJVF	WARD		9	901	901 A4
MINUT AIR FORCE STATION	QJVM	WARD		9	901	901 A4
BISMARCK RADAR HOMB SCORING SITE	BSER	HURLLEIGH		10	1005	1013

STATE - NE

INSTALLATION

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
HASTINGS HOUSING SITE	KFZY	ADAMS		10	1010	1027 A5
HASTINGS RADAR HOMB SCORING SITE	KGAC	ADAMS		10	1010	1027 A5
LINCOLN BACHELOR HSG SITE	NGCL	LANCASTER	LINCOLN	10	1008	1022
LINCOLN MUNICIPAL AIRPORT (ANG)	NGCB	LANCASTER	LINCOLN	10	1008	1022
OFFUTT AIR FORCE BASE	SGRP	SARPY	OMAHA	10	1009	1023 B22
OFFUTT FAMILY HOUSING ANNEX	SGER	SARPY	OMAHA	10	1009	1023 B22

TABLE 2
AIR FORCE INSTALLATIONS

STATE - NH	INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
	NEW HAMPSHIRE SATELLITE TRACKING ANNEX	RNGF	HILLSBORO		1 102 105 A10
	PEASE AIR FORCE BASE	SZDT	ROCKINGHAM		1 102 104 A9

STATE - NJ

INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
ATLANTIC CITY AIRPORT ANG	AQRC	ATLANTIC	ATLANTIC CITY	2 203 204 B12
ATLANTIC CITY FAMILY HOUSING ANX	AQRE	ATLANTIC		2 203 204 B12
GIBBSBORO AIR FORCE STATION	HMUD	CAMDEN	PHILADELPHIA	2 203 204 B10
GIBBSBORO FAMILY HOUSING ANNEX	HMUR	CAMDEN	PHILADELPHIA	2 203 204 B10
MCGUIRE AIR FORCE BASE	PTFL	BURLINGTON	PHILADELPHIA	2 203 204 B12
PALERMO COMMUNICATIONS FACILITY	STGZ	CAPE MAY		2 203 204 B12

STATE - NM

INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
CANNON AIR FORCE BASE	CZGZ	CURRY		12 1203 1205 A20
MELROSE AIR FORCE RANGE	PXLY	ROOSEVELT		12 1203 1205 A20
AIR FORCE PLANT NO 83	ACJR	BERNALILLO	ALBUQUERQUE	13 1302 1302 AN-1 AN-2
CLOUDCROFT SATELLITE TRACKING ANNEX	EAGD	OTERO		13 1302 1305 AN-1 AN-5
HOLLOWMAN AIR FORCE BASE	KHRD	OTERO		13 1302 1305 AN-1 AN-5
KIRTLAND AIR FORCE BASE	MHMV	BERNALILLO	ALBUQUERQUE	13 1302 1302 AN-1 AN-2
ROSWELL FAMILY HOUSING SITE	YGZT	CHAVES		13 1304 1306 AN-1 AN-2
SACRAMENTO PEAK UPPER AIR RSCH SITE	UPZV	OTERO		13 1302 1305 AN-1 AN-5
SILVER CITY RADAR SITE	VRVD	GRANT		15 1503 1503 A0-1 A0-2 A3-1

TABLE 2
AIR FORCE INSTALLATIONS

STATE - NV

INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
INDIAN SPRINGS AF AUXILIARY FIELD	LKTC	CLARK	LAS VEGAS	15 1502 1502 A0-1 A0-2
NELLIS AIR FORCE BASE	RKMF	CLARK	LAS VEGAS	15 1502 1502 A0-1 A0-2
NELLIS AIR FORCE RANGE	RKXF	CLARK	LAS VEGAS	15 1502 1502 A0-1 A0-2
HAMTHORNE RADAR BOMB SCORING SITE	RHSX	MINERAL	RENO	16 1604 1605 A9
RENO INTERNATIONAL AIRPORT	UCTL	WASHOE	RENO	16 1604 1605 A10

STATE - NY

INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
AIR FORCE PLANT NO 59	ACHQ	BROOME	BINGHAMTON	2 204 205 B13
AVA TEST ANNEX	ASEF	ONEIDA	UTICA-ROME	2 201 202 B1
FLOYD TEST ANNEX	GUCX	ONEIDA	UTICA-ROME	2 201 202 B1
GRIFFISS AIR FORCE BASE	JREZ	ONEIDA	UTICA-ROME	2 201 202 B1
MONTAUK AIR FORCE STATION	GOBA	SUFFOLK	NASSAU-SUFFOLK	2 202 203 B4
PLATTSBURGH AIR FORCE BASE	THWA	CLINTON	NASSAU-SUFFOLK	1 106 201 A20
ROSLYN AIR NATIONAL GUARD STATION	UMLH	NASSAU	NASSAU-SUFFOLK	2 202 203 B4
SARATOGA AIR FORCE STATION	UYEM	SARATOGA	ALBANY-SCHENECTADY-TROY	2 201 202 B2
SARATOGA FAMILY HOUSING ANX	UYEN	SARATOGA	ALBANY-SCHENECTADY-TROY	2 201 202 B2
SCHENECTADY AIRPORT ANG	VRDZ	SCHENECTADY	ALBANY-SCHENECTADY-TROY	2 201 202 B2
SUFFOLK COUNTY AIRPORT ANG	WKVB	SUFFOLK	NASSAU-SUFFOLK	2 202 203 B4
VERONA TEST ANNEX	XWUQ	ONEIDA	UTICA-ROME	2 201 202 B1
WESTCHESTER COUNTY MUNICIP APT ANG	YSSF	WESTCHESTER	NEW YORK	2 202 203 B5
AIR FORCE PLANT NO 38	ACGF	NIAGARA	BUFFALO	4 407 412 A27
AIR FORCE PLANT NO 49	ACNF	ERIE	BUFFALO	4 407 412 A23
GREAT BEND RADAR BOMB SCORING SITE	JKHY	JEFFERSON	SYRACUSE	4 408 415 A28
HANCOCK FAMILY HOUSING ANX	JBKB	ONONDAGA	SYRACUSE	4 408 414 A26
HANCOCK FIELD MCC 10	KBMT	ONONDAGA	SYRACUSE	4 408 414 A26
LOCKPORT AIR FORCE STATION	NMMH	NIAGARA	BUFFALO	4 407 412 A27
LOCKPORT FAMILY HOUSING ANNEX	RYKJ	NIAGARA	BUFFALO	4 407 412 A27
NIAGARA FALLS INTERNATIONAL AIRPORT	RYKQ	NIAGARA	BUFFALO	4 407 412 A27
STOCKBRIDGE TEST ANNEX	WHXP	MADISON	SYRACUSE	4 408 414 A26
WATERTOWN AIR FORCE STATION	YNBZ	JEFFERSON	SYRACUSE	4 408 415 A28
YOUNGSTOWN TEST SITE	ZGDR	NIAGARA	BUFFALO	4 407 412 A27

TABLE 2

AIR FORCE INSTALLATIONS

STATE - OH

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
AIR FORCE PLANT NO 27	ACGH	LUCAS	TOLEDO	4	406	410 A1R
AIR FORCE PLANT NO 47	ACRD	CUYAHOGA	CLEVELAND	4	407	411 A20
CAMP PERRY ANG STATION	EURC	OTTAWA	TOLEDO	4	406	410 A19
TOLEDO EXPRESS AIRPORT ANG	WYTD	FULTON	TOLEDO	4	406	410 A1R
AIR FORCE PLANT NO 36	ACGS	HAMILTON	CINCINNATI	5	502	509 A9
BLUE ASH ANG STATION	BVGM	HAMILTON	CINCINNATI	5	502	509 A9
GENTILE DEFENSE ELECTRONICS SUPPLY CTR	HUSA	MONTGOMERY	DAYTON	5	503	508 A11
MANFIELD LAHM AIRPORT ANG	PBYX	RICHLAND	MANFIELD	5	503	504 A5
NEWMARK AIR FORCE STATION	RRIC	LICKING		5	503	504 A5
RICKENBACKER AIR FORCE BASE	NLZG	FRANKLIN	COLUMBUS	5	503	506 A10
SPRINGFIELD FAMILY HOUSING SITE NO 1	WAAR	CLARK	SPRINGFIELD	5	503	508 A11
SPRINGFIELD MUNICIPAL AIRPORT ANG	MAAR	CLARK	SPRINGFIELD	5	503	508 A11
WRIGHT PATTERSON AIR FORCE BASE	ZHTV	GREENE	DAYTON	5	503	508 A9
YOUNGSTOWN MUNICIPAL AIRPORT	ZQUE	TRUMBULL	YOUNGSTOWN-WARREN	5	502	503 A2
ZANESVILLE ANG STATION	ZRVL	MUSKINGUM		5	503	504 A5

STATE - OK

INSTALLATION

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
AIR FORCE PLANT NO 3	ACFM	TULSA	TULSA	11	1104	1111 AO-3
ALTUS AIR FORCE BASE	ASGN	JACKSON		11	1106	1113 AO-5
ALTUS COMM ANNEX RECEIVER	ASGO	JACKSON		11	1106	1113 AO-5
ALTUS TRAINING ANNEX	ACNJ	HARMON		11	1106	1113 AO-5
FREDERICK MUNICIPAL AIRPORT	GZPZ	TILLMAN		11	1106	1113 AO-5
KEGELMAN AIR FORCE AUXILIARY FIELD	MBE8	ALFALFA		11	1103	1106 AO-2
OKLAHOMA CITY AIR FORCE STATION	SHCZ	OKLAHOMA	OKLAHOMA CITY	11	1105	1110 AO-4
OKLAHOMA CITY RECRUITING FAM HSG SITE	SHDC	OKLAHOMA	OKLAHOMA CITY	11	1105	1110 AO-4
TINKER AIR FORCE BASE	WMYK	OKLAHOMA	OKLAHOMA CITY	11	1105	1110 AO-4
TULSA INTERNATIONAL AIRPORT	XHZG	TULSA	TULSA	11	1104	1111 AO-3
VANCE AIR FORCE BASE	XTLF	GARFIELD		11	1103	1105 AO-2
WILL ROGERS WORLD AIRPORT	YZEU	OKLAHOMA	OKLAHOMA CITY	11	1105	1110 AO-4

TABLE 2

AIR FORCE INSTALLATIONS

STATE - OH

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
MOUNT HERO AIR FORCE STATION	QYGL	YAMHILL		17	1705	1712
MOUNT HERO FAMILY HOUSING ANNEX	QYUZ	TILLAMOOK		17	1705	1716 A1
NORTH BEND AIR FORCE STATION	RYBW	COOS		17	1705	1716 A1
NORTH BEND COMMUNICATION FACILITY ANNEX	RYCC	COOS		17	1705	1716 A1
NORTH BEND FAMILY HOUSING ANNEX	RYCQ	COOS		17	1705	1716 A1
PORTLAND BACHELOR HSG SITE	TQJJ	MULTNOMAH	PORTLAND	17	1705	1713 A4
PORTLAND INTERNATIONAL AIRPORT	TKKD	MULTNOMAH	PORTLAND	17	1705	1713 A4
KEND AIR FORCE STATION	MCXE	KLAMATH		18	1801	1801
KINGSLEY FAMILY HOUSING ANNEX	MFNF	KLAMATH		18	1801	1801
KINGSLEY FIELD	MFMM	KLAMATH		18	1801	1801
KINGSLEY FIRING RANGE ANNEX	MFYD	KLAMATH		18	1801	1801

STATE - PA

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
BENTON AIR FORCE STATION	SHRJ	SULLIVAN		2	204	205 816
FT INDIANTOWN GAP ANG STATION	LKLM	LEBANON		2	204	205 816
HARRISBURG INTERNATIONAL APT OLMSTED FLD	SHYQ	DAUPHIN	HARRISBURG	2	204	205 816
NEW CUMBERLAND RECRUITING FAM HSG SITE	RPCU	CUMBERLAND	HARRISBURG	2	204	205 817
PHILADELPHIA IAP COMM STN (ANG)	TDXE	PHILADELPHIA	PHILADELPHIA	2	203	204 810
SHAVERTOWN FAMILY HOUSING SITE	VLRN	LUZERNE	NORTHEAST PENNSYLVANIA	2	204	205 816
STATE COLLEGE ANG STATION	WFGE	CENTRE		2	204	205 814
WILLOW GROVE AIR RESERVE FACILITY	ZANA	MONTGOMERY	PHILADELPHIA	2	203	204 810
GREATER PITTSBURGH ANG BASE	JLSS	ALLEGHENY	PITTSBURGH	5	502	503 A3
GREATER PITTSBURGH INTERNATIONAL AIRPORT	JLSO	ALLEGHENY	PITTSBURGH	5	502	503 A3

STATE - RI

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
COVENTRY ANG STATION	EQDF	KENT		1	103	106 814
NORTH SMITHFIELD ANG STATION	SAEJ	KENT	PROVIDENCE-WARWICK-PANTUCKET	1	103	106 814
THEODORE F GREEN MUNICIPAL AIRPORT	WVAD	KENT	PROVIDENCE-WARWICK-PANTUCKET	1	103	106 814

TABLE 2

AIR FORCE INSTALLATIONS

STATE - SC

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
CHARLESTON AIR FORCE BASE	DKFX	CHARLESTON	CHARLESTON-NORTH CHARLESTON	3	302	305 A305B
GREENVILLE FAMILY HOUSING SITE	JNMP	GREENVILLE	GREENVILLE-SPARTANBURG	3	302	305 A305A
MCENTIRE AIR NATIONAL GUARD BASE	PSTE	RICHLAND	COLUMBIA	3	302	305 A305B
MYRTLE BEACH AIR FORCE BASE	RDRD	HORRY		3	302	304 A304
NORTH AIR FORCE AUXILIARY FIELD	SBML	ORANGEBURG		3	302	305 A305B
NORTH CHARLESTON AIR FORCE STATION	RYSM	CHARLESTON	CHARLESTON-NORTH CHARLESTON	3	302	305 A305B
POINSETT AIR FORCE RANGE	TKFH	SUMTER		3	302	304 A304
SHAW AIR FORCE BASE	VLSB	SUNTER		3	302	304 A304

STATE - SD

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
BADLANDS AIR FORCE RANGE	ATPZ	SHANNON		10	1005	1014 A2
ELLSWORTH AIR FORCE BASE	FXBM	PENNINGTON		10	1005	1012
ELLSWORTH FAMILY HOUSING ANNEX NR 2	FYDD	MEADE		10	1005	1012
ELLSWORTH FAMILY HOUSING ANNEX NR 3	FXDE	PENNINGTON		10	1005	1012
ELLSWORTH FAMILY HOUSING ANNEX NR 4	FZDF	MEADE		10	1005	1012
JOE FOSS FIELD ANG	LUXC	MINNEHAHA	STIOUX FALLS	10	1006	1017 A3

A-39

STATE - TN

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
NASHVILLE METROPOLITAN AIRPORT	SKTZ	DAVIDSON	NASHVILLE-DAVIDSON	5	507	514 A18
ALCOA AIR NATIONAL GUARD STATION	ACEW	BLOUNT	KNOXVILLE	6	601	601
ARNOLD ENGINEERING DEVELOP CENT	ANZY	COFFE		6	602	604
CHATTANOOGA FAMILY HOUSING SITE	DLUN	HAMILTON	CHATTANOOGA	6	601	602 A5
KNOXVILLE FAMILY HOUSING SITE	MJXS	BLOUNT	KNOXVILLE	6	601	601
LOVELL FIELD AIR NATIONAL GUARD	NTEA	HAMILTON	CHATTANOOGA	6	601	602 A5
MCGHEE TYSON AIRPORT	PSXE	BLOUNT	KNOXVILLE	6	601	601
MEMPHIS INTERNATIONAL AIRPORT	PYKL	SHELBY	MEMPHIS	8	801	801 A1-8

TABLE 2
AIR FORCE INSTALLATIONS
STATE - TX

INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
SHEPPARD AIR FORCE BASE	VNVP	WICHITA	WICHITA FALLS	11 1106 1113 AT-1 AT-2
ATM FORCE PLANT NO. 4	ACFJ	TARRANT	DALLAS-FT WORTH	12 1202 1203 A16 A17
BERGSTROM AIR FORCE BASE	BJHZ	TRAVIS	AUSTIN	12 1204 1209 A16 A17
BROOKS AIR FORCE BASE	CNRC	BEAR	SAN ANTONIO	12 1205 1210 A16 A17
BROOKS HOMES FAMILY HOUSING ANNEX	CNBF	BEAR	SAN ANTONIO	12 1205 1210 A16 A17
CASWELL AIR FORCE BASE	DDPF	TARRANT	DALLAS-FT WORTH	12 1202 1203 A16 A17
CASTROVILLE MUNICIPAL AIRPORT	DFJD	MEDINA		12 1205 1211 A16 A17
COLORADO CITY AIR FORCE AUXILIARY FIELD	EDPZ	MITCHELL		12 1204 1209 A13 A16
COMMERCE BACHELOR HSG SITE	EFNZ	HUNT		12 1201 1201 A16 A17
DALLAS FT WORTH FAMILY HOUSING SITE	EZUZ	DALLAS	DALLAS-FT WORTH	12 1202 1203 A16 A17
DALLAS RECRUITING FAM HSG SITE	EZTB	TARRANT	DALLAS-FT WORTH	12 1202 1203 A16 A17
DYESS AIR FORCE BASE	FNWZ	TAYLOR	ABILENE	12 1203 1206 A16 A17
ELLINGTON AIR FORCE BASE	FMJH	HARRIS	HOUSTON	12 1202 1204 A15 A16
GARLAND ANG STATION	HSKD	DALLAS	DALLAS-FT WORTH	12 1202 1203 A16 A17
GOODFELLOW AIR FORCE BASE	JCGU	TOM GREEN	SAN ANGELO	12 1201 1201 A16 A17
GREENVILLE FAMILY HOUSING ANNEX	JPPS	HUNT		12 1205 1211 A16 A17
HONDO MUNICIPAL AIRPORT	KZKP	MEDINA		12 1202 1204 A15 A16
HOUSTON ADM ANX	LCMS	HARRIS	HOUSTON	12 1202 1204 A15 A16
HOUSTON FAMILY HOUSING ANX	LCMN	HARRIS	HOUSTON	12 1202 1204 A15 A16
HOUSTON RECRUITING FAM HSG SITE	LCMJ	HARRIS	HOUSTON	12 1205 1210 A16 A17
KELLY AIR FORCE BASE	MBPB	BEAR	SAN ANTONIO	12 1202 1203 A16 A17
LA PORTE ANG STATION	MNMA	HARRIS	HOUSTON	12 1202 1204 A15 A16
LACKLAND AIR FORCE BASE	MPLS	HEXAP	SAN ANTONIO	12 1205 1210 A16 A17
NEDERLAND ANG STATION	RJVF	JEFFERSON	BEAUMONT-PORT ARTHUR-PORT ORANGE	12 1201 1202 A15 A16
RANDOLPH AIR FORCE BASE	TYMX	BEAR	SAN ANTONIO	12 1205 1210 A16 A17
REESE AF AUXILIARY FIELD	UBNS	TERRY		12 1204 1204 A16 A17
REESE AIR FORCE BASE	UBNY	LUBBOCK	LUBBOCK	12 1203 1205 A16 A17
SAN ANTONIO AIR FORCE STATION	USGE	REXAR	SAN ANTONIO	12 1205 1210 A16 A17
SEGUIN AIR FORCE AUXILIARY FIELD	VGJT	GUADALUPE	SAN ANTONIO	12 1202 1203 A16 A17
US NAVAL AIR STATION DALLAS	EZTH	DALLAS	DALLAS-FT WORTH	12 1204 1208 A13 A16
WEBB AIR FORCE BASE	YGAZ	HOWARD		13 1305 1308 AT-4 AT-5
EAGLE PASS AUXILIARY FIELD	FQUZ	MAVERICK		13 1305 1308 AT-4 AT-5
LAUGHLIN AIR FORCE BASE	MZOP	VAL VERDE		

TABLE 2

AIR FORCE INSTALLATIONS

STATE - UT

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
AIR FORCE PLANT NO 77	ACJJ	DAVIS	SALT LAKE CITY-OGDEN	16	1601	1602 A2
AIR FORCE PLANT NO 78	ACJK	BOX ELDER	SALT LAKE CITY-OGDEN	16	1601	1601 A1
FRANCIS PEAK ANG STATION	GYHT	DAVIS	SALT LAKE CITY-OGDEN	16	1601	1602 A2
HILL AIR FORCE BASE	KRSM	DAVIS	SALT LAKE CITY-OGDEN	16	1601	1602 A2
HILL AIR FORCE RANGE	KSCZ	TOOELE	SALT LAKE CITY-OGDEN	16	1601	1602 A3
SALT LAKE CITY INTERNATIONAL AIRPORT	USEB	SALT LAKE	SALT LAKE CITY-OGDEN	16	1601	1602 A3
WENDOVER AIR FORCE RANGE	YSHF	TOOELE	SALT LAKE CITY-OGDEN	16	1601	1602 A3

STATE - VA

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
BYRD FIELD	CVVM	HENRICO	RICHMOND	2	205	206 826
CAPE CHARLES AIR FORCE STATION	DBFH	NORTHAMPTON	PETERSBURG-COLONIAL HEIGHTS-HOPE	2	205	208 819
FORT LEE AIR FORCE STATION	HGQC	PRINCE GEORGE	PETERSBURG-COLONIAL HEIGHTS-HOPE	2	205	208 826
LANGLEY AIR FORCE BASE	MUJH	HAMPTON	NEWPORT NEWS-HAMPTON	2	205	208 827
LANGLEY FAMILY HOUSING ANNEX	MUJC	YORK	NEWPORT NEWS-HAMPTON	2	205	208 827
MANASSAS COMMUNICATIONS FACILITY ANNEX	NZZV	PRINCE WILLIAM	WASHINGTON	2	206	207 822
MANASSAS FAMILY HOUSING ANNEX	NZZQ	PRINCE WILLIAM	WASHINGTON	2	206	207 822
SHIP SHOAL ISLAND AIR FORCE RANGE	VPXB	NORTHAMPTON	WASHINGTON	2	205	208 819
BEDFORD AIR FORCE STATION	BCXD	BEDFORD		3	301	301 A301A

STATE - VT

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
BURLINGTON FAMILY HOUSING ANNEX	CUSV	CHITTENDEN		1	106	201 A20
BURLINGTON INTERNATIONAL AIRPORT	CURZ	CHITTENDEN		1	106	201 A20
ST ALBANS AIR FORCE STATION	MAOR	FRANKLIN		1	106	201 A20
ST ALBANS FAMILY HOUSING ANNEX	MAOS	FRANKLIN		1	106	201 A20

TABLE 2
AIR FORCE INSTALLATIONS
STATE - WA

INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
BELLINGHAM MUNICIPAL AIRPORT ANG	BHVT	WHATCOM		17 1706 1714 A2
BLAINE AIR FORCE STATION	BTPT	WHATCOM		17 1706 1714 A2
BLAINE FAMILY HOUSING ANNEX	BTDE	WHATCOM		17 1706 1714 A2
DES MOINES FAMILY HOUSING ANNEX	FFBW	KING	SEATTLE-EVERETT	17 1706 1714 A2
FAIRCHILD AIR FORCE BASE	GJNZ	SPOKANE	SPOKANE	17 1701 1703
FAIRCHILD AIRMAN HOUSING ANNEX	GJLD	SPOKANE	SPOKANE	17 1701 1703
FAIRCHILD FAMILY HOUSING ANNEX	GJLQ	SPOKANE	SPOKANE	17 1701 1703
FEDERAL WAY FAMILY HOUSING ANNEX	GPBN	KING	SEATTLE-EVERETT	17 1706 1714 A2
FOUR LAKES COMMUNICATIONS STATION	GXTN	SPOKANE	SPOKANE	17 1701 1703
WAKAH AIR FORCE STATION	NYLE	CLALLAM		17 1706 1714 A2
MCCHORD AIR FORCE BASE	POWY	PIERCE	TACOMA	17 1706 1714 A2
MICA PEAK AIR FORCE STATION	OCPE	SPOKANE	SPOKANE	17 1701 1703
MOUNTLAKE TERRACE FAMILY HOUSING SITE	QXEF	KING	SEATTLE-EVERETT	17 1706 1714 A2
PAINE FIELD ANG STATION	STDF	SNOWHOMISH	SEATTLE-EVERETT	17 1706 1714 A2
RENTON FAMILY HOUSING ANNEX	UCUY	KING	SEATTLE-EVERETT	17 1706 1714 A2
SEATTLE ADMIN ANNEX	VFTA	KING	SEATTLE-EVERETT	17 1706 1714 A2
SEATTLE AIR NATIONAL GUARD BASE	VFUL	KING	SEATTLE-EVERETT	17 1706 1714 A2
SEATTLE FAMILY HOUSING ANNEX	VFVP	KING	SEATTLE-EVERETT	17 1706 1714 A2
SEATTLE RECRUITING FAM HSG SITE	VFVR	KITSAP		17 1706 1714 A2
SPOKANE FAMILY HOUSING ANNEX	VZCK	SPOKANE	SPOKANE	17 1701 1703
SPOKANE INTERNATIONAL AIRPORT	VZCR	SPOKANE	SPOKANE	17 1701 1703
SPOKANE INTERNATIONAL APT ANG	VZBT	SPOKANE	SPOKANE	17 1701 1703

TABLE 2

AIR FORCE INSTALLATIONS

STATE - WI

INSTALLATION	CODE	COUNTY	SMSA	REG	ASR	SREG	PROBLEMS
GEN MITCHELL FIELD	HTUX	MILWAUKEE	MILWAUKEE	4	403	404	AR
GENERAL MITCHELL FLD ANG	HTUV	MILWAUKEE	MILWAUKEE	4	403	404	AR
GREENFIELD FAMILY HOUSING SITE	JNBQ	MILWAUKEE	MILWAUKEE	4	403	404	AR
MILWAUKEE AWS WATA BHG SITE	QHKZ	MILWAUKEE	MILWAUKEE	4	403	404	AR
MILWAUKEE FAMILY HOUSING SITE	QHLN	MILWAUKEE	MILWAUKEE	4	403	404	AR
MILWAUKEE RECRUITING FAM HSG SITE	QHKV	MAUKESHA	MILWAUKEE	4	403	404	AR
MILWAUKEE AIR FORCE STATION	ALLU	MARATHON	MILWAUKEE	7	702	706	A19
ANTIAGO COMMUNICATIONS FACILITY ANNEX	ALLM	MARATHON	MILWAUKEE	7	702	706	A19
TRUAX FIELD	XGFG	DANE	MADISON	7	703	708	A16
VOLK FIELD AIR NATIONAL GUARD BASE	YAGF	JUNEAU	MADISON	7	702	706	A18

STATE - WV

INSTALLATION

INSTALLATION	CODE	COUNTY	SMSA	REG	ASR	SREG	PROBLEMS
EASTERN WVA REGIONAL APT	PJVV	BERKELEY	MILWAUKEE	2	206	207	822
MARTINSBURG FAMILY HOUSING SITE	PJVR	BERKELEY	MILWAUKEE	2	206	207	822
ELKVIEW FAMILY HOUSING SITE	FMGU	KANAWHA	CHARLESTON	5	504	505	A7
KANAWHA COUNTY AIRPORT (ANG)	LYBH	KANAWHA	CHARLESTON	5	504	505	A7

STATE - NY

INSTALLATION

INSTALLATION	CODE	COUNTY	SMSA	REG	ASR	SREG	PROBLEMS
CHEYENNE MUNICIPAL AIRPORT ANG	DPEZ	LARAMIE	MILWAUKEE	10	1007	1019	
FRANCIS E WARREN AIR FORCE BASE	CHLN	LARAMIE	MILWAUKEE	10	1007	1019	

TABLE 3. NAVY AND MARINE INSTALLATIONS BY STATE

This table provides an alphabetical listing by state of the Navy/Marine primary base structure that is located within the 50 United States. The data shown in each column are described as follows:

INSTALLATION	-- Name of the installation.
CODE	-- Installation Identification Code Number. These data are provided only in this table as an aid for positive installation identification where installation names are similar.
COUNTY	-- Name of the county in which the installation is located.
SMSA	-- Name of the Standard Metropolitan Statistical Area in which the installation is located. If blank, the installation is not in a SMSA as defined by the Office of Management and Budget and published by the Department of Commerce.
REG	-- Water Resources Region in which the installation is located. There are 20 regions in the 50 United States.
ASR	-- Aggregated Subregion in which the installation is located. The last two digits define the ASR and the first one or two digits identify the region number.
SREG	-- Subregion in which the installation is located. The identifier is from the First National Water Assessment and is a further breakdown of the ASR. These data are provided only in this table as an assist to any further studies which compare data from the first and second assessments.
PROBLEMS	-- Specifically identified water and land-related resource problems for the area in which the installation is located. The alpha prefix identifies the category of problem (A--severe problem identified but not yet under study, and B--severe problem already under study). An abbreviated description of the problem may be found in Appendix B by noting the region and problem numbers for the installation in this table. Example: Naval Station Adak is in Region 19 with Problem Number B16. Turning to Appendix B, find Region 19 and Problem B16. (In Appendix B, Category A problems are listed first in numerical order, followed by Category B problems in numerical order.) Where a second alpha indicator appears, it is the first letter in the state where the installation is located. All problem numbers are the same as those found in the Second National Water Assessment in order to facilitate reference to them.

TABLE 3

NAVY AND MARINE INSTALLATIONS

STATE - AK

INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
COMMUNICATION STATION AD4K	00812	ALEUTIAN ISLANDS		19 1901 1904 816
NAVAL STATION AD4K	60462	ALEUTIAN ISLANDS		19 1901 1904 816
OCEAN SYS CTR CAPE PRINCE OF WALES	66001	NONE		19 1901 1902 89

STATE - AL

INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
NAVAL AIR STA ALF BARIN	60234	BALDWIN	MOBILE	3 308 316 A316C
NAVAL AIR STA OLF BREWTON	60508	ESCAMBRIA		3 307 314 A314
NAVAL AIR STA OLF FAIRCLOTH	60234	BALDWIN	MOBILE	3 308 316 A316C
NAVAL AIR STA OLF KAISER	60234	BALDWIN	MOBILE	3 308 316 A316C
NAVAL AIR STA OLF KINGS	60234	BALDWIN	MOBILE	3 308 316 A316C
NAVAL AIR STA OLF MAGNOLIA	60234	BALDWIN	MOBILE	3 308 316 A316C
NAVAL AIR STA OLF MIDDLETON	00204	CONECUH		3 307 314 A314
NAVAL AIR STA OLF SILVER HILL	60234	BALDWIN	MOBILE	3 308 316 A316C
NAVAL AIR STA OLF SUMMERDALE	60234	BALDWIN	MOBILE	3 308 316 A316C
NAVAL AIR STA OLF WOLFE	60234	BALDWIN	MOBILE	3 308 316 A316C

A-46

STATE - AZ

INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
ELECTRONICS LAB ARIZONA FACILITY	00953	MARICOPA	PHOENIX	15 1503 1505 A0-1 A0-2 A3-4
MARCORPS AIR STATION YUMA	62974	YUMA		15 1502 1506 A0-1 A0-2 A2-5

TABLE 3
NAVY AND MARINE INSTALLATIONS
STATE - CA

INSTALLATION	CODE	COUNTY	MSA	REC	ASR	SREG	PROBLEMS
AIR STATION ALAMEDA	00236	ALAMEDA	SAN FRANCISCO-OAKLAND	18	1804	1806	8042
AIR STATION LEMOORE SEQUOIA NATL FOREST	63042	KINGS		18	1803	1803	A031
AIR STATION MOFFETT FIELD	00296	SANTA CLARA	SAN JOSE	18	1804	1806	8041
AMPHIBIOUS BASE CORONADO	62021	SAN DIEGO	SAN DIEGO	18	1806	1808	8062
AMPHIBIOUS BASE CUYAMACA MTS	62021	SAN DIEGO	SAN DIEGO	18	1806	1808	8064
AMPHIBIOUS BASE SAN CLEMENTE IS	62021	LOS ANGELES	LOS ANGELES-LONG BEACH	18	1806	1808	8063
COMMUNICATION STATION SAN DIEGO	70240	SAN DIEGO	SAN DIEGO	18	1806	1808	8062
COMMUNICATION STATION STOCKTON	00886	SISKIYOU		18	1801	1801	
CONSTRUCTION BATTALN CTR	62583	VENTURA	OXNARD-SIMI VALLEY-VENTURA	18	1806	1808	8065
ELECTRONIC LAB BORDER FIELD	00953	SAN DIEGO	SAN DIEGO	18	1806	1808	8062
ELECTRONIC SYS ENG CTR SAN DIEGO	65584	SAN DIEGO	SAN DIEGO	18	1806	1808	8062
FLY ANTI-SUB WARF TRN CTR SAN DIEGO	00948	SAN DIEGO	SAN DIEGO	18	1806	1808	8062
FLY COMBAT TRNG CENTER SAN DIEGO	61665	SAN DIEGO	SAN DIEGO	18	1806	1808	8062
MARCORPS AIR STATION EL TORO	60050	ORANGE	ANAHEIM-SANTA ANA-GARDEN GROVE	18	1806	1808	8061
MARCORPS AIR STATION/H/SANTA ANA	62535	ORANGE	ANAHEIM-SANTA ANA-GARDEN GROVE	18	1806	1808	8061
MARCORPS BASE CAMP PENDLETON	00681	SAN DIEGO	SAN DIEGO	18	1806	1808	8062
MARCORPS BASE TWENTYNINE PALMS	67399	SAN BERNARDINO	RIVERSIDE-SAN BERNARDINO-ONTARIO	18	1806	1808	
MARCORPS LOGSTS SUP BASE BARSTOW	62204	SAN BERNARDINO	RIVERSIDE-SAN BERNARDINO-ONTARIO	18	1806	1808	
MARCORPS RECRUIT DEPOT SAN DIEGO	00243	SAN DIEGO	SAN DIEGO	18	1806	1808	8062
MARCORPS TRAINING CAMP BRIDGEPORT	00681	MONO		18	1807	1809	
MSLE TEST CTR LAGUNA PLAK	63126	VENTURA	OXNARD-SIMI VALLEY-VENTURA	18	1806	1808	H065
MSLE TEST CTR PRINCE IS	63126	VENTURA	OXNARD-SIMI VALLEY-VENTURA	18	1806	1808	H065
MSLE TEST CTR SAN MIGUEL IS	63126	SANTA BARRARA	SANTA BARRARA-SANTA MARIA-LOMPOC	18	1805	1807	
MSLE TEST CTR SAN NICHOLAS IS	63126	VENTURA	OXNARD-SIMI VALLEY-VENTURA	18	1806	1808	H065
MSLE TEST CTR SANTA BARBARA IS	63126	VENTURA	OXNARD-SIMI VALLEY-VENTURA	18	1806	1808	H065
MSLE TEST CTR SANTA CRUZ IS	63126	SANTA BARBARA	SANTA BARRARA-SANTA MARIA-LOMPOC	18	1805	1807	
NAT PARACHUTE TEST RANGE	60296	IMPERIAL		18	1806	1810	8062
NAVAL AIR STA ALF SAN CLEMENTE	00246	ORANGE	ANAHEIM-SANTA ANA-GARDEN GROVE	18	1806	1808	8061
NAVAL AIR STA CAMP WARNER SPRINGS	00246	SAN DIEGO	SAN DIEGO	18	1806	1808	8064
NAVAL AIR STA OLF IMPERIAL BEACH	00246	SAN DIEGO	SAN DIEGO	18	1806	1808	8064
NAVAL AIR STA SYCAMORE CANYON	00246	SAN DIEGO	SAN DIEGO	18	1806	1808	8062
NAVAL AIR STATION ALF CROWS LANDING	00296	STANISLAUS	MODESTA	18	1803	1804	A031
NAVAL AIR STATION MIRAMAR	60259	SAN DIEGO	SAN DIEGO	18	1806	1808	8062
NAVAL AIR STATION NORTH ISLAND	00246	SAN DIEGO	SAN DIEGO	18	1806	1808	8062
NAVAL FACILITY BIG SUR	57054	MONTEREY	SALINAS-SEASIDE-MONTEREY	18	1805	1807	A051
NAVAL FACILITY CENTERVILLE BEACH	57053	HUMBOLDT		18	1801	1801	
NAVAL STATION SAN DIEGO	00245	SAN DIEGO	SAN DIEGO	18	1806	1808	8062

TABLE 3

NAVY AND MARINE INSTALLATIONS
STATE - CA

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
OCEAN SYSTEMS CENTER SAN DIEGO	66001	SAN DIEGO	SAN DIEGO	18 1806	1808 8062	8063
OCEANS SYSTEMS CENTER SAN CLEMENTE IS	66001	LOS ANGELES	LOS ANGELES-LONG BEACH	18 1806	1808	
PACIFIC MISSILE TEST CENTER	63126	VENTURA	OXNARD-SIMI VALLEY-VENTURA	18 1806	1808	8065
PUBLIC WORKS CENTER SAN FRANCISCO	68378	SAN FRANCISCO	SAN FRANCISCO-OAKLAND	18 1804	1806 8042	
REG WED CENT CAMP PENLETON	63387	SAN DIEGO	SAN DIEGO	18 1806	1808 8062	8063
REGIONAL MEDICAL CENTER LONG BEACH	68094	SAN DIEGO	SAN DIEGO	18 1806	1808 8062	8063
REGIONAL MEDICAL CENTER OAKLAND	68090	LOS ANGELES	LOS ANGELES-LONG BEACH	18 1806	1808 8062	
REGIONAL MEDICAL CENTER SAN DIEGO	68097	ALAMEDA	LOS ANGELES-LONG BEACH	18 1804	1806 8042	
RESERVE CTR LOS ALAMITOS	68056	SAN DIEGO	SAN FRANCISCO-OAKLAND	18 1806	1808 8062	8063
SAN PEDRO FUEL FARM	00279	ORANGE	ANAHEIM-SANTA ANA-GARDEN GROVE	18 1806	1808 8062	
SCOL/POSTGRADUATE ANNEX	00244	LOS ANGELES	LOS ANGELES-LONG BEACH	18 1806	1808 8062	
SCOL/POSTGRADUATE REACH ARFA	62271	MONTEREY	SALINAS-SEASIDE-MONTEREY	18 1805	1807 8051	
SECURITY GROUP ACTIVITY SONOMA	62271	MONTEREY	SALINAS-SEASIDE-MONTEREY	18 1805	1807 8051	
SHIPYARD LONG BEACH	00848	SONOMA	SANTA ROSA	18 1805	1807 8051	
SHIPYARD MARE IS	60258	LOS ANGELES	LOS ANGELES-LONG BEACH	18 1804	1806 8042	
JUMARINE SUPPORT FAC SAN DIEGO	00221	SOLANO	VALLEJO-FAIRFIELD-NAPA	18 1804	1806 8042	
SUPPLY CENTER ESTERO BAY BRANCH	63406	SAN DIEGO	SAN DIEGO	18 1804	1808 8062	8063
SUPPLY CENTER FT LOMA ANNEX	00244	SAN DIEGO	SAN DIEGO	18 1805	1807	
SUPPLY CENTER NATIONAL CITY ANNEX	00244	LOS ANGELES	LOS ANGELES-LONG BEACH	18 1806	1808 8062	8063
SUPPLY CENTER OAKLAND	00228	ALAMEDA	SAN DIEGO	18 1806	1808 8062	8063
SUPPLY CENTER SAN DIEGO	00244	SAN DIEGO	SAN FRANCISCO-OAKLAND	18 1804	1806 8042	
SUPPORT ACT MARE IS	66890	SISKIYOU	SAN DIEGO	18 1804	1808 8062	8063
SUPPORT ACTIVITY LONG BEACH	66311	LOS ANGELES	LOS ANGELES-LONG BEACH	18 1801	1801	
SUPPORT ACTIVITY TREASURE IS	60028	SAN FRANCISCO	LOS ANGELES-LONG BEACH	18 1806	1808 8062	
TRAINING CENTER SAN DIEGO	00247	SAN DIEGO	SAN FRANCISCO-OAKLAND	18 1804	1806 8042	8063
WEAPONS CENTER CHINA LAKE	60530	KERN	BAKERSFIELD	18 1806	1808 8062	
WEAPONS STATION CONCORD	60036	CONTRA COSTA	SAN FRANCISCO-OAKLAND	18 1803	1803	
WEAPONS STATION PITTSBURG	60036	CONTRA COSTA	SAN FRANCISCO-OAKLAND	18 1804	1806 8042	
WEAPONS STATION SEAL BEACH	60701	ORANGE	ANAHEIM-SANTA ANA-GARDEN GROVE	18 1804	1806 8042	

TABLE 3

NAVY AND MARINE INSTALLATIONS

STATE - CT

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
SUBMARINE BASE NEW LONDON	00129	NEW LONDON	NEW LONDON-NORWICH	1	104	107 A19
UNDERWATER SYS CTR NEW LONDON LAB	66604	NEW LONDON	NEW LONDON-NORWICH	1	104	107 A19

STATE - DC

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
COMMUNICATION UNIT CHELTENHAM	00788	DIST OF COL	WASHINGTON	2	206	207 B22
DISTRICT COMMANDANT	00171	DIST OF COL	WASHINGTON	2	206	207 B22
MARCORPS BARRACKS WASHINGTON	67353	DIST OF COL	WASHINGTON	2	206	207 B22
NAVAL OBSERVATORY	62285	DIST OF COL	WASHINGTON	2	206	207 B22
RESEARCH LABORATORY	00173	DIST OF COL	WASHINGTON	2	206	207 B22
SECURITY STATION	70092	DIST OF COL	WASHINGTON	2	206	207 B22

STATE - DE

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
NAVAL FACILITY LEWES	57040	SUSSEX		2	205	206 B19

TABLE 3

NAVY AND MARINE INSTALLATIONS

STATE - FL

INSTALLATION	CODE	COUNTY	SMSA	REG	ASR	SREG	PROBLEMS
AEROSPACE & REG MED CTR PENSACOLA	00203	ESCAMBRIA	PENSACOLA	3	307	314	A314
AIR STATION SAUFLEY FIELD	60234	ESCAMBRIA	PENSACOLA	3	307	314	A314
COASTAL SYSTEMS LAB PANAMA CITY	61331	BAY	PANAMA CITY	3	307	314	A314
NAVAL AIR STA LAKE GEORGE TARGET	00207	VOLUSIA	DAYTONA BEACH	3	304	308	A308
NAVAL AIR STA MARQUESAS KEYS	00213	MONROE		3	305	309	A309
NAVAL AIR STA OLF 4A	00204	ESCAMBRIA	PENSACOLA	3	307	314	A314
NAVAL AIR STA OLF 8A	00204	ESCAMBRIA	PENSACOLA	3	307	314	A314
NAVAL AIR STA OLF BRONSON	00204	ESCAMBRIA	PENSACOLA	3	307	314	A314
NAVAL AIR STA OLF CHOCTAW	00204	SANTA ROSA	PENSACOLA	3	307	314	A314
NAVAL AIR STA OLF HOLLY	00204	SANTA ROSA	PENSACOLA	3	307	314	A314
NAVAL AIR STA OLF SANTA	00204	SANTA ROSA	PENSACOLA	3	307	314	A314
NAVAL AIR STA OLF SITE 2	60508	SANTA ROSA	PENSACOLA	3	307	314	A314
NAVAL AIR STA OLF SITE 6	00204	ESCAMBRIA	PENSACOLA	3	307	314	A314
NAVAL AIR STA OLF SPENCER	00204	SANTA ROSA	PENSACOLA	3	307	314	A314
NAVAL AIR STA OLF WHITEHOUSE	60200	DUVAL	JACKSONVILLE	3	304	308	A308
NAVAL AIR STA PUTNAM TARGET	00207	PUTNAM		3	304	308	A308
NAVAL AIR STA STEVENS LAKE TARGET	00207	CLAY	JACKSONVILLE	3	304	308	A308
NAVAL AIR STATION CECIL FIELD	60200	DUVAL	JACKSONVILLE	3	304	308	A308
NAVAL AIR STATION JACKSONVILLE	00207	DUVAL	JACKSONVILLE	3	304	308	A308
NAVAL AIR STATION KEY WEST	00213	MONROE		3	305	309	A309
NAVAL AIR STATION OLF SITE 1	60508	SANTA ROSA	PENSACOLA	3	307	314	A314
NAVAL AIR STATION PENSACOLA	00204	ESCAMBRIA	PENSACOLA	3	307	314	A314
NAVAL AIR STATION PINECASTLE RANGE	00207	MARION		3	304	308	A308
NAVAL AIR STATION WHITING FIELD	60508	SANTA ROSA	PENSACOLA	3	307	314	A314
NAVAL HOSPITAL KEY WEST	00267	MONROE		3	305	309	A309
NAVAL STATION WAYPORT	60201	DUVAL	JACKSONVILLE	3	304	308	A308
PUBLIC WORKS CTR PENSACOLA	65114	ESCAMBRIA	PENSACOLA	3	307	314	A314
REGIONAL MEDICAL CENTER JACKSONVILLE	68085	DUVAL	JACKSONVILLE	3	304	308	A308
REGIONAL MEDICAL CENTER ORLANDO	65492	ORANGE	ORLANDO	3	304	308	A308
SECURITY GROUP ACT HOMESTEAD	62492	DADE	MIAMI	3	305	309	A309
TECHNICAL TRNG CTR CERRY STA	63082	ESCAMBRIA	PENSACOLA	3	307	314	A314
TRAINING CENTER ORLANDO	65928	ORANGE	ORLANDO	3	304	308	A308

TABLE 3

NAVY AND MARINE INSTALLATIONS

STATE - GA

INSTALLATION

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
MARCORPS LOGISTICS SUPPORT ACT ALBANY	67004	DOUGHERTY	ALBANY	3	306	313 A312 A313
NAVAL AIR STATION ATLANTA	00196	COBB	ATLANTA	3	306	313 A312 A313
SCOL/SUPPLY CORPS ATHENS	62741	CLARKE		3	303	307 A307

STATE - HI

INSTALLATION

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
COMM AREA MASTER STATION MAHIAWA	00950	HONOLULU	HONOLULU	20	2003	2006 86-4
FLT OPNS CNTRL CTR KUNIA	57086	HONOLULU	HONOLULU	20	2003	2006 86-4
MAGAZINE KULE KOLE PASS	68297	HONOLULU	HONOLULU	20	2003	2006 86-5
MAGAZINE LOWER KIPAPA	68297	HONOLULU	HONOLULU	20	2003	2006 86-5
MAGAZINE LUALUALEI	68297	HONOLULU	HONOLULU	20	2003	2006 86-5
MAGAZINE PORT ALLEN	68297	KAUAI		20	2004	2007 87-3
MAGAZINE MAIKELE	68297	HONOLULU	HONOLULU	20	2003	2006 86-5
MAGAZINE MAIPO PENINSULA	68297	HONOLULU	HONOLULU	20	2003	2006 86-5
MAGAZINE WEST LOCH	68297	HONOLULU	HONOLULU	20	2003	2006 86-5
MARCORPS AIR STATION KANEOME BAY	00318	HONOLULU	HONOLULU	20	2003	2006 86-2
MARCORPS CAMP M M SMITH	67385	HONOLULU	HONOLULU	20	2003	2006 86-4
MISSILE FACILITY BARKING SANDS	63126	KAUAI		20	2004	2007 87-5
MISSILE FACILITY PORT ALLEN	0534A	KAUAI		20	2004	2007 87-3
MSLE FACILITY MAKANA RIDGE	0534A	KAUAI		20	2004	2007 87-3
NAVAL AIR STA ALF FORD IS	00334	HONOLULU	HONOLULU	20	2003	2006 86-4
NAVAL AIR STA KAHOOLAWE IS	00334	HONOLULU	HONOLULU	20	2003	2006 86-4
NAVAL AIR STA KAULA ROCK	00334	HONOLULU	HONOLULU	20	2003	2006 86-4
NAVAL AIR STATION BARBERS POINT	00334	HONOLULU	HONOLULU	20	2003	2006 86-4
NAVAL STATION CAMP CATLIN	62813	HONOLULU	HONOLULU	20	2003	2006 86-4
NAVAL STATION FORD IS	62813	HONOLULU	HONOLULU	20	2003	2006 86-4
NAVAL STATION HUKULANI	62813	HONOLULU	HONOLULU	20	2003	2006 86-4
NAVAL STATION MAKALAPA	62813	HONOLULU	HONOLULU	20	2003	2006 86-4
NAVAL STATION OHANA NW	62813	HONOLULU	HONOLULU	20	2003	2006 86-4
NAVAL STATION PEARL CITY	62813	HONOLULU	HONOLULU	20	2003	2006 86-4
NAVAL STATION PEARL HARBOR	00311	HONOLULU	HONOLULU	20	2003	2006 86-4
PUBLIC WORKS CTR PEARL HARBOR	62755	HONOLULU	HONOLULU	20	2003	2006 86-4
SHIPYARD PEARL HARBOR	00311	HONOLULU	HONOLULU	20	2003	2006 86-4
SUBMARINE BASE PEARL HARBOR	00314	HONOLULU	HONOLULU	20	2003	2006 86-5
SUPPLY CENTER HONOLULU	00604	HONOLULU	HONOLULU	20	2003	2006 86-4

TABLE 3

NAVY AND MARINE INSTALLATIONS

STATE - ID

INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
SHIP RESEARCH & DEVMT CTR BONNER	66001	KOOTENAI		17 1701 1703

STATE - IL

INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
AIR STATION GLENVIEW	00275	COOK	CHICAGO	4 403 404 A9
PUBLIC WORKS CTR GREAT LAKES	65311	LAKE	CHICAGO	4 403 404 A9
REGIONAL MEDICAL CENTER GREAT LAKES	48092	LAKE	CHICAGO	4 403 404 A9
TRAINING CENTER GREAT LAKES	00210	LAKE	CHICAGO	4 403 404 A9

STATE - IN

INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
AVIONICS FACILITY INDIANAPOLIS	00163	MARION	INDIANAPOLIS	5 506 512 A14
WEAPONS SUPPORT CENTER BLOOMINGTON	00164	MONROE	BLOOMINGTON	5 506 512 A14
WEAPONS SUPPORT CENTER CRANE	00164	MARTIN	INDIANAPOLIS	5 506 512 A14
WEAPONS SUPPORT CENTER DUGGER	00164	SULLIVAN	INDIANAPOLIS	5 506 513 A14

STATE - KY

INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
ORDNANCE STATION LOUISVILLE	00197	JEFFERSON	LOUISVILLE	5 505 511 A15

TABLE 3

NAVY AND MARINE INSTALLATIONS

STATE - LA

INSTALLATION

NAVAL AIR STATION NEW ORLEANS
SUPPORT ACT NEW ORLEANSCODE COUNTY
00206 PLAQUEMINES
00205 ORLEANS

SMSA

NEW ORLEANS

REG ASR SREG PROBLEMS
8 803 809 A3-1
8 803 809 A3-1

STATE - MA

INSTALLATION

AIR STATION SOUTH WEYMOUTH
NAVAL FACILITY NANTUCKETCODE COUNTY
00101 PLYMOUTH
57039 NANTUCKET

SMSA

REG ASR SREG PROBLEMS
1 103 106 R11
1 103 106 R11

STATE - MD

INSTALLATION

AIR TEST CENTER PATUXENT RIVER
AIR TEST CTR BAY FOREST TRKG SITE
AIR TEST CTR BLOODSWORTH IS
AIR TEST CTR CHESAPEAKE TRKG SITE
AIR TEST CTR POINT LOOKOUT TRKG SITE
AIR TEST CTR POINT NO POINT TRKG SITE
NAVAL HOSPITAL ANNAPOLIS
NAVAL STATION ANNAPOLIS
ORDNANCE STATION INDIAN HEAD
ORDNANCE STATION STUMP NECK
REGIONAL MEDICAL CENTER BETHESDA
SCOL/ACADEMY ANNAPOLIS
SHIP RESEARCH & DEVMT CTR BETHESDA
SHIP RESEARCH & DEVMT CTR ANNAPOLIS DIV
SURFACE WEAPONS CENTER SOLOMONS
SURFACE WEAPONS CENTER WHITE OAK
TRAINING CENTER BAINBRIDGECODE COUNTY
00421 ST MARYS
00421 ST MARYS
00421 ST MARYS
00421 ST MARYS
00421 ST MARYS
00421 ST MARYS
00162 ANNE ARUNDEL
62226 ANNE ARUNDEL
00174 CHARLES
00174 CHARLES
00168 MONTGOMERY
00161 ANNE ARUNDEL
00167 MONTGOMERY
00167 MONTGOMERY
60921 CALVERT
60921 MONTGOMERY
00493 CECIL

SMSA

REG ASR SREG PROBLEMS
2 204 207 B22
2 204 207 B22
2 204 207 B22
2 204 207 B22
2 204 207 B22
2 204 207 B22
2 205 206 B1A
2 205 206 B1A
2 204 207 B22
2 204 207 B22
2 204 207 B22
2 205 206 B1B
2 205 206 B1B
2 204 207 B22
2 204 207 B22
2 205 206 B1A
2 205 206 B1A
2 204 207 B22
2 204 207 B22
2 205 206 B1A
2 205 206 B1A
2 204 207 B22
2 203 204 B1A

TABLE 3

NAVY AND MARINE INSTALLATIONS

STATE - ME

INSTALLATION	CODE	COUNTY	SMSA	REG	ASR	SREG	PROBLEMS
AIR STATION BRUNSWICK	60087	CUMBERLAND	PORTLAND	1	102	104	A4
COMMUNICATION UNIT CUTLER	63038	WASHINGTON		1	101	101	A2
NAVAL AIR STA PHIPPSBURG	60087	SAGadahoc		1	101	103	A4
SECURITY GROUP ACTIVITY WINTER HARBOR	00702	HANCOCK		1	101	102	A2

STATE - MS

INSTALLATION	CODE	COUNTY	SMSA	REG	ASR	SREG	PROBLEMS
AIR STATION MERIDIAN	63043	LAUDERDALE		3	309	317	A317
CONST BATTALN CTR DE SOTO NATL FOREST	62604	HARRISON	GULFPORT-BILOXI	3	309	317	A317
CONST BATTALN CTR GULFPORT	62604	HARRISON	GULFPORT-BILOXI	3	309	317	A317
NAVAL AIR STA OLF BRAVO	63043	KEMPER		3	308	316	A316A
NAVAL AIR STATION OLF ALPHA	63043	NOXUBEE		3	308	316	A316A
NAVAL HOME	00153	HARRISON	GULFPORT-BILOXI	3	309	317	A317

STATE - NC

INSTALLATION	CODE	COUNTY	SMSA	REG	ASR	SREG	PROBLEMS
MARCORPS AIR FIELD OAK GROVE	67001	ONSLow		3	301	303	A303
MARCORPS AIR STA NEW HANOVER	00146	NEW HANOVER	WILMINGTON	3	301	303	A303
MARCORPS AIR STA NEW RIVER	62573	ONSLow		3	301	303	A303
MARCORPS AIR STATION CHERRY POINT	00146	CRAVEN		3	301	302	A302
MARCORPS AUX LAND FIELD BOGUE	00146	CARTERET		3	301	302	A302
MARCORPS BASE CAMP LEJEUNE	67001	ONSLow		3	301	303	A303
MARCORPS OUTLYING FIELD ATLANTIC	00146	CARTERET		3	301	302	A302
NAVAL AIR STA PALMETTO PT	60191	TYRRELL		3	301	301	A3018
NAVAL FACILITY CAPE MATTERAS	57041	DARE		3	301	301	A3018
REGIONAL MEDICAL CENTER CAMP LEJEUNE	68093	ONSLow		3	301	303	A303

TABLE 3

NAVY AND MARINE INSTALLATIONS

STATE - NH

INSTALLATION

REGIONAL MEDICAL CLINIC PORTSMOUTH
SHIPYARD PORTSMOUTH

CODE COUNTY

00105 ROCKINGHAM
00102 ROCKINGHAM

SMSA

REG ASP SREG PROBLEMS

1 102 104 A9
1 102 104 A9

STATE - NJ

INSTALLATION

AIR ENGINEERING CENTER LAKEHURST
AIR PROPULSION TEST CTR TRENTON
WEAPONS STATION EARLE

CODE COUNTY

68335 OCEAN
62376 MERCER
60478 MONMOUTH

SMSA

REG ASP SREG PROBLEMS

2 203 204 B10
2 203 204 B10
2 202 203 B11

STATE - NV

INSTALLATION

AIR STATION FALLON
AIR STATION TARGET 17
AIR STATION TARGET 19
AIR STATION TARGET 21
AIR STATION TARGET B16
AMMUNITION DEPOT HAWTHORNE

CODE COUNTY

60495 CHURCHILL
60495 CHURCHILL
60495 CHURCHILL
60495 CHURCHILL
00236 MINERAL

SMSA

REG ASP SREG PROBLEMS

16 1604 1605 A9 A10
16 1604 1605 A9 A10
16 1604 1605 A9 A10
16 1604 1605 A9 A10
16 1604 1605 A9 A10
16 1604 1605 A9

NAVY AND MARINE INSTALLATIONS

INSTALLATION	CODE	COUNTY	SMSA	REG	ASR	SREG	PROBLEMS
CLINIC BRANCH ST ALBANS	60008	QUEENS	NEW YORK	2	202	203	86
SUPPORT ACT BROOKLYN	61174	KINGS	NEW YORK	2	202	203	86
SUPPORT ACT NYSDA	61174	KINGS	NEW YORK	2	202	203	86
SUPPORT ACTIVITY MITCHELL FIELD	61174	NASSAU	NASSAU-SUFFOLK	2	202	203	84
UNDERWATER SYS CTR FISHERS IS	66604	SUFFOLK	NASSAU-SUFFOLK	2	202	203	84
UNDERWATER SYS CTR LAKE SENECA	66604	YATES		4	408	414	A26

INSTALLATION	CODE	COUNTY	SMSA	REC	ASR	SREG	PROBLEMS
FINANCE CENTER CLEVELAND	00034	CUYAHOGA	CLEVELAND	4	407	411	A20

INSTALLATION	CODE	COUNTY	SMSA	REG	ASR	SREG	PROBLEMS
AMMUNITION DEPOT MCALESTER	60162	PITTSBURG		11	1105	1110	AD-4

REG	ASR	SREG	PROBLEMS
17	1705	1716	A1

TABLE 3
NAVY AND MARINE INSTALLATIONS
STATE - PA

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
AIR DEVELOPMENT CTR WARMINSTER	62269	BUCKS	PHILADELPHIA	2	203	204 810
AIR STATION WILLOW GROVE	00158	MONTGOMERY	PHILADELPHIA	2	203	204 810
AVIATION SUPPLY OFFICE PHILADELPHIA	00288	PHILADELPHIA	PHILADELPHIA	2	203	204 810
REGIONAL MEDICAL CENTER PHILADELPHIA	68101	PHILADELPHIA	PHILADELPHIA	2	203	204 810
SHIPS PARTS CONTROL CTR MECHANICSBURG	00104	CUMBERLAND	HARRISBURG	2	204	205 817
SHIPYARD PHILADELPHIA	00151	PHILADELPHIA	PHILADELPHIA	2	203	204 810
SUPPORT ACT PHILADELPHIA	61169	PHILADELPHIA	PHILADELPHIA	2	203	204 810

STATE - RI

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
CONSTRUCTION BATTALN CTR DAVISVILLE	62578	WASHINGTON	PROVIDENCE-WARWICK-PANTUCKET	1	103	106 812
EDUCATION & TRAINING CTR NEWPORT	62661	NEWPORT	PROVIDENCE-WARWICK-PANTUCKET	1	103	106 812
REGIONAL MEDICAL CENTER NEWPORT	68086	NEWPORT	PROVIDENCE-WARWICK-PANTUCKET	1	103	106 812
SCOL/MAR COLLEGE NEWPORT	00124	NEWPORT	PROVIDENCE-WARWICK-PANTUCKET	1	103	106 812
UNDERWATER SYSTEMS CENTER NEWPORT	66604	NEWPORT	PROVIDENCE-WARWICK-PANTUCKET	1	103	106 812

STATE - SC

INSTALLATION	CODE	COUNTY	SMSA	REG ASR	SREG	PROBLEMS
FLT 8AL MIS SUB TRNG CTR CHARLESTON	63322	CHARLESTON	CHARLESTON-NORTH CHARLESTON	3	302	305 A3058
FLT MINE WARFARE TRNG CTR CHARLESTON	62603	CHARLESTON	CHARLESTON-NORTH CHARLESTON	3	302	305 A3058
MARCORPS AIR STATION BEAUFORT	60169	BEAUFORT		3	302	305 A3058
MARCORPS RECRUIT DEPOT PARRIS ISLAND	00263	BEAUFORT		3	302	305 A3058
NAVAL HOSPITAL BEAUFORT	61337	BEAUFORT		3	302	305 A3058
NAVAL STATION CHARLESTON	61165	CHARLESTON	CHARLESTON-NORTH CHARLESTON	3	302	305 A3058
REGIONAL MEDICAL CENTER CHARLESTON	68084	CHARLESTON	CHARLESTON-NORTH CHARLESTON	3	302	305 A3058
SHIPYARD CHARLESTON	00191	CHARLESTON	CHARLESTON-NORTH CHARLESTON	3	302	305 A3058
SUPPLY CENTER CHICORA TANK FARM	00612	CHARLESTON	CHARLESTON-NORTH CHARLESTON	3	302	305 A3058
WEAPONS STATION CHARLESTON	00193	BERKELEY	CHARLESTON-NORTH CHARLESTON	3	302	305 A3058

TABLE 3

NAVY AND MARINE INSTALLATIONS

STATE - TN

INSTALLATION

AIR STATION MEMPHIS
REGIONAL MEDICAL CENTER MEMPHIS

CODE COUNTY
00639 SHELBY
60002 SHELBY

SMSA

MEMPHIS
MEMPHIS

REG ASR SREG PROBLEMS

8 801 801 A1-7
8 801 801 A1-7

STATE - TX

INSTALLATION

NAVAL AIR STA ALF CARANISS NUECES
NAVAL AIR STA ALF GOLIAD
NAVAL AIR STA ALF ORANGE
NAVAL AIR STATION ALF MALDRON
NAVAL AIR STATION CHASE FIELD
NAVAL AIR STATION CORPUS CHRISTI
NAVAL AIR STATION DALLAS
NAVAL AIR STATION KINGSVILLE
NAVAL AIR STATION PERRY PLACE
REGIONAL MEDICAL CENTER CORPUS CHRISTI

CODE COUNTY
00216 NUECES
60376 GOLIAD
60241 JIM WELLS
00216 NUECES
60376 BEE
00216 NUECES
00215 DALLAS
60241 KLEBERG
00216 NUECES
00285 NUECES

SMSA

CORPUS CHRISTI
CORPUS CHRISTI
CORPUS CHRISTI
DALLAS-FT WORTH
CORPUS CHRISTI
CORPUS CHRISTI

REG ASR SREG PROBLEMS

12 1205 1211 A15 A16 A17 811
12 1205 1210 A16 A17
12 1205 1211 A16 A17
12 1205 1211 A15 A16 A17 811
12 1205 1210 A16 A17
12 1205 1211 A15 A16 A17 811
12 1202 1203 A16 A17 82 83
12 1205 1211 A16 A17
12 1205 1211 A15 A16 A17 811
12 1205 1211 A15 A16 A17 811

TABLE 3

NAVY AND MARINE INSTALLATIONS

STATE - VA

INSTALLATION	CODE	COUNTY	SMSA	REG	ASR	SREG	PROBLEMS
ADMIN COMD ARM FORK STAFF COLLEGE	64356	NORFOLK	NORFOLK-VIRGINIA BEACH-PORTSMOUTH	2	205	208	827
AMPHIBIOUS BASE NORFOLK	61414	NORFOLK	NORFOLK-VIRGINIA BEACH-PORTSMOUTH	2	205	208	827
COMM AREA MASTER STATION NORFOLK	70272	NORFOLK	NORFOLK-VIRGINIA BEACH-PORTSMOUTH	2	205	208	827
FLT ASW TRNG CTR NORFOLK	63401	NORFOLK	NORFOLK-VIRGINIA BEACH-PORTSMOUTH	2	205	208	827
FLT COMBAT TRNG CTR ATLANTIC	00281	VIRGINIA BEACH	NORFOLK-VIRGINIA BEACH-PORTSMOUTH	2	205	208	827
HOSPITAL QUANTICO	00231	PRINCE WILLIAM	WASHINGTON	2	206	207	822
MARCORPS AIR STATION QUANTICO	00262	PRINCE WILLIAM	WASHINGTON	2	204	207	822
MARCORPS CAMP ELMORE DET	67391	NORFOLK	NORFOLK-VIRGINIA BEACH-PORTSMOUTH	2	205	208	827
MARCORPS DEV & EDUCN CMD QUANTICO	00264	PRINCE WILLIAM	WASHINGTON	2	206	207	822
MARCORPS HQTRS HENDERSON HALL	67353	ARLINGTON	WASHINGTON	2	206	207	822
NAVAL AIR STA ALF FENTRESS	60191	CHESAPEAKE	NORFOLK-VIRGINIA BEACH-PORTSMOUTH	2	205	208	827
NAVAL AIR STA TANGIER IS	60191	ACCOMACK	NORFOLK-VIRGINIA BEACH-PORTSMOUTH	2	205	208	819
NAVAL AIR STATION NGRFOLK	60188	NORFOLK	NORFOLK-VIRGINIA BEACH-PORTSMOUTH	2	205	208	827
NAVAL AIR STATION VIRGINIA BEACH	60191	VIRGINIA BEACH	NORFOLK-VIRGINIA BEACH-PORTSMOUTH	2	205	208	827
NAVAL STATION NORFOLK	62686	NORFOLK	NORFOLK-VIRGINIA BEACH-PORTSMOUTH	2	205	208	827
PUBLIC WORKS CTR NORFOLK	00187	NORFOLK	NORFOLK-VIRGINIA BEACH-PORTSMOUTH	2	205	208	827
REGIONAL MED CTR PORTSMOUTH	66818	NORFOLK	NORFOLK-VIRGINIA BEACH-PORTSMOUTH	2	205	208	827
SHIPYARD NORFOLK	00181	NORFOLK	NORFOLK-VIRGINIA BEACH-PORTSMOUTH	2	205	208	827
SUPPLY CTR NORFOLK	00189	NORFOLK	NORFOLK-VIRGINIA BEACH-PORTSMOUTH	2	205	208	827
SURFACE WEAPONS CENTER DAHLGREN	00178	KING GEORGE	NORFOLK-VIRGINIA BEACH-PORTSMOUTH	2	204	207	822
WEAPONS STATION YORKTOWN	00109	YORK	NEWPORT NEWS-HAMPTON	2	205	208	827

TABLE 3
NAVY AND MARINE INSTALLATIONS
STATE - WA

INSTALLATION	CODE	COUNTY	SMSA	REG ASR SREG PROBLEMS
AIR STA ALF KITSAP	00620	KITSAP		17 1706 1714 A2
AIR STATION OLF COUPEVILLE	00620	ISLAND		17 1706 1714 A2
AIR STATION WHIDREY IS	00620	ISLAND		17 1706 1714 A2
NAVAL FACILITY PACIFIC BEACH	57056	GRAYS HARBOR		17 1705 1715
RADIO STATION JTM CREEK	70273	SNOWHOMISH	SEATTLE-EVERETT	17 1706 1714 A2
REGIONAL MED CTR BREMERTON	68095	KITSAP		17 1706 1714 A2
SHIPYARD BREMERTON	00251	KITSAP		17 1706 1714 A2
SUBMARINE BASE BANGOR	68436	KITSAP		17 1706 1714 A2
SUPPLY CENTER BREMERTON	00406	KITSAP		17 1706 1714 A2
SUPPORT ACTIVITY SEATTLE	00255	KING	SEATTLE-EVERETT	17 1706 1714 A2
TORPEDO STATION KEYPORT	00253	JEFFERSON		17 1706 1714 A2

TABLE 4. DOD INSTALLATIONS BY REGION

This table provides an integrated list of the Army, Air Force, Navy, and Marine installations from Tables 1, 2, and 3. It portrays the DOD primary base structure in the 50 United States by water resource region and by aggregated subregion. Data shown in the columns is described below.

ASR -- Aggregated Subregion in which the installation is located.

INSTALLATION -- Name of the installation.

CM -- Military service component. A--Army; AF--Air Force; N--Navy or Marine.

SMSA -- Name of the Standard Metropolitan Statistical Area in which the installation is located. If blank the installation is in a SMSA as defined by Office of Management and Budget and published by the Department of Commerce.

COUNTY -- Name of the county in which the installation is located.

ST -- Name of the state in which the installation is located.

PROBLEMS -- Specifically identified water and land-related resource problems for the area in which the installation is located. The alpha prefix identifies the category of problem, A being a severe problem which has been identified but is not yet under study for solution, and B being a severe problem which is identified and under study for correction. An abbreviated description of the problem may be found in Appendix B by noting both the region number and the problem number for the installation. Example: Caswell Air Force Station is in Region 1 with Problem A1. Turning to Appendix B, find Region 1 and Problem A1. (In Appendix B, Category A problems are listed first in numerical order, followed by Category B problems in numerical order.) Where a second alpha indicator appears it is the first letter in the state where the installation is located. All problem numbers are the same as those found in the Second National Water Assessment in order to facilitate reference to them.

TABLE 4

DDO INSTALLATIONS BY REGION

REGION - 1

ASR INSTALLATION	CM 945A	COUNTY	ST PROBLEMS
101 CASWELL AIR FORCE STATION	AF	AROSTOOK	ME A1
101 LORING AIR FORCE BASE	AF	AROSTOOK	ME A1
101 LORING FAMILY HOUSING ANNEX	AF	AROSTOOK	ME A1
101 LORING FAMILY HOUSING ANNEX NO 2	AF	AROSTOOK	ME A1
101 LORING FAMILY HOUSING ANNEX NO 3	AF	AROSTOOK	ME A1
101 LORING FAMILY HOUSING ANNEX NO 4	AF	AROSTOOK	ME A1
101 LORING FAMILY HOUSING ANNEX NO 5	AF	AROSTOOK	ME A1
101 LOUIS BLUTNER RADAR BOMB SCORING SITE	AF	AROSTOOK	ME A1
101 BUCKS HARBOR AIR FORCE STATION	AF	WASHINGTON	ME A2
101 BUCKS HARBOR FAMILY HOUSING ANNEX	AF	WASHINGTON	ME A2
101 COMMUNICATION UNIT CUTLER	N	HANCOCK	ME A2
101 SECURITY GROUP ACTIVITY WINTER HARBOR	N	HANCOCK	ME A2
101 BANGOR HOUSING SITE 3	AF	PENOBSCOT	ME A3
101 BANGOR INTERNATIONAL AIRPORT (ANG)	AF	PENOBSCOT	ME A3
101 CHARLESTON AIR FORCE STATION	AF	PENOBSCOT	ME A3
101 CHARLESTON FAMILY HOUSING ANNEX	AF	PENOBSCOT	ME A3
101 NAVAL AIR STA PHIPPSBURGH	N	SAGadahoc	ME A4
102 PEASE AIR FORCE BASE	AF	ROCKINGHAM	NH A9
102 REGIONAL MEDICAL CLINIC PORTSMOUTH	AF	ROCKINGHAM	NH A9
102 SHIPYARD PORTSMOUTH	N	ROCKINGHAM	NH A9
102 SOUTH PORTLAND ANG STATION	N	CUMBERLAND	ME A7
102 AIR STATION BRUNSWICK	N	CUMBERLAND	ME A4
102 NEW HAMPSHIRE SATELLITE TRACKING ANNEX	AF	HILLSBORO	NH A10
103 EDWARDS CAMP	A	BARNSTABLE	MA B11
103 NO TRURO FAMILY HOUSING ANNEX	AF	BARNSTABLE	MA B11
103 NORTH TRURO AIR FORCE STATION	AF	BARNSTABLE	MA B11
103 OTIS AIR FORCE BASE	AF	BARNSTABLE	MA B11
103 NAVAL FACILITY NANTUCKET	N	NANTUCKET	MA B11
103 AIR STATION SOUTH WEYMOUTH	N	PLYMOUTH	MA B11
102 AIR FORCE PLANT NO 25	AF	ESSEX	MA B11
103 US ARMY M-T & MECH RESRCH CFN	A	MIDDLESEX	MA B11
103 USA NATICK DEV CEN	A	MIDDLESEX	MA A10
103 AIR FORCE PLANT NO 28	AF	MIDDLESEX	MA B11
103 MANSCOM AIR FORCE BASE	AF	MIDDLESEX	MA B11
103 WALTHAM FEDERAL CENTER ANNEX	AF	MIDDLESEX	MA B11
103 WELLESLEY ANG STATION	AF	NORFOLK	MA B11
103 SOUTH ROSTON SUPPORT ACT	A	SUFFOLK	MA B11
103 DEVENS FORT	A	MIDDLESEX-WORCESTER	MA A10
103 COVENTRY ANG STATION	AF	KENT	RI B14
103 NORTH SMITHFIELD ANG STATION	AF	KENT	RI B14
103 THEODORE F GREEN MUNICIPAL AIRPORT	AF	KENT	RI B14
103 EDUCATION & TRAINING CTR NEWPORT	N	NEWPORT	RI B12
103 REGIONAL MEDICAL CENTER NEWPORT	N	NEWPORT	RI B12
103 SCOL/WAR COLLEGE NEWPORT	N	NEWPORT	RI B12
103 UNDERWATER SYSTEMS CENTER NEWPORT	N	NEWPORT	RI B12

TABLE 4

DOD INSTALLATIONS BY REGION

REGION - 1

ASH INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
103 CONSTRUCTION BATTALN CTR DAVISVILLE	N PROVIDENCE-WARWICK-PANTUCKET	WASHINGTON	RI 812
103 AIR FORCE PLANT NO 63	AF WORCESTER	WORCESTER	MA 813
103 WORCESTER ANG STATION	AF WORCESTER	WORCESTER	MA 813
104 STORRS BACHELOR HOUSING SITE	AF HARTFORD	TOLLAND	CT 819
104 ORANGE ANG COMMUNICATION STATION	AF NEW HAVEN-WEST HAVEN	NEW HAVEN	CT 816
104 SUBMARINE BASE NEW LONDON	N NEW LONDON-NORWICH	NEW LONDON	CT 819
104 UNDERWATER SYS CTR NEW LONDON LAB	N NEW LONDON-NORWICH	NEW LONDON	CT 819
105 COLD REGIONS RE LAB	A	GRAFTON	NH 816
105 BRADLEY INTERNATIONAL AIRPORT	AF HARTFORD	HARTFORD	CT 816
105 BARNES MUNICIPAL AIRPORT ANG	AF SPRINGFIELD-CHICOPEE-HOLYOKE	HAMPDEN	MA 816
105 WESTOVER AIR FORCE BASE	AF SPRINGFIELD-CHICOPEE-HOLYOKE	HAMPDEN	MA 816
106 PLATTSBURGH AIR FORCE BASE	AF	CLINTON	NY 820
106 DARCOM FIRING RANGE UNDERHILL	A	CHITTENDEN	VT 820
106 NG ETWAN ALLEN AFB	A	CHITTENDEN	VT 820
106 HURLINGTON FAMILY HOUSING ANX	AF	CHITTENDEN	VT 820
106 HURLINGTON INTERNATIONAL AIRPORT	AF	CHITTENDEN	VT 820
106 ST ALBANS AIR FORCE STATION	AF	FRANKLIN	VT 820
106 ST ALBANS FAMILY HOUSING ANG	AF	FRANKLIN	VT 820

TABLE 4
 DOD INSTALLATIONS BY REGION
 REGION - 2

ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
201 STEWART ANNEX	A	ORANGE	NY B3
201 WEST POINT MIL RES	A	ORANGE	NY B3
201 WATERVLIET ARSENAL	A	ALBANY	NY B2
201 SARATOGA AIR FORCE STATION	AF	ALBANY-SCHENECTADY-TROY	NY B2
201 SARATOGA FAMILY HOUSING ANX	AF	SARATOGA	NY B2
201 SCENECTADY AIRPORT ANG	AF	SCENECTADY	NY B2
201 AVA TEST ANNEX	AF	ONEIDA	NY B1
201 FLOYD TEST ANNEX	AF	ONEIDA	NY B1
201 GRIFFISS AIR FORCE BASE	AF	ONEIDA	NY B1
201 VERONA TEST ANNEX	AF	ONEIDA	NY B1
202 HANCOCK FORT	A	ONEIDA	NY B1
202 MONMOUTH FORT CHAS #00D	A	MONMOUTH	NJ B11
202 MONMOUTH FORT COLES	A	MONMOUTH	NJ B11
202 MONMOUTH FORT EVANS	A	MONMOUTH	NJ B11
202 MONMOUTH FORT HQ ECOM	A	MONMOUTH	NJ B11
202 MONMOUTH FORT OAKHURST	A	MONMOUTH	NJ B11
202 WEAPONS STATION EARLE	N	MONMOUTH	NJ B11
202 ROSLYN AIR NATIONAL GUARD STATION	AF	MONMOUTH	NJ B11
202 SUPPORT ACTIVITY MITCHELL FIELD	AF	NASSAU	NY B4
202 MONTAUK AIR FORCE STATION	AF	NASSAU	NY B4
202 SUFFOLK COUNTY AIRPORT ANG	AF	SUFFOLK	NY B4
202 UNDERWATER SYS CTR FISHERS IS	N	SUFFOLK	NY B4
202 MILITARY OCEAN TML RAYONNE	A	SUFFOLK	NY B4
202 HAMILTON FORT	A	HUDSON	NJ B6
202 MANHATTAN BEACH HSG	A	KINGS	NY B6
202 MILITARY OCEAN TML BROOKLYN	A	KINGS	NY B6
202 SUPPORT ACT BROOKLYN	N	KINGS	NY B6
202 SUPPORT ACT NSYD AREA	N	KINGS	NY B6
202 TILDEN FORT	A	QUEENS	NY B6
202 TOTTEN FORT	A	QUEENS	NY B6
202 CLINIC BRANCH ST ALBANS	N	QUEENS	NY B6
202 WADSWORTH FORT	N	QUEENS	NY B6
202 WESTCHESTER COUNTY MUNICIPT APT ANG	AF	WESTCHESTER	NY B5
202 PICATINNY ARS	A	MORRIS	NJ B6
203 DOVER AIR FORCE BASE	AF	KENT	DE B10
203 COVER FAMILY HOUSING ANNEX	AF	KENT	DE B10
203 ATLANTIC CITY FAMILY HOUSING ANX	AF	ATLANTIC	NJ B12
203 PALERMO COMMUNICATIONS FACILITY	AF	CAPE MAY	NJ B12
203 AIR ENGINEERING CENTER LAKEHURST	N	OCEAN	NJ B10
203 ATLANTIC CITY AIRPORT ANG	AF	ATLANTIC	NJ B12
203 TRAINING CENTER GAINSBIDGE	N	CECIL	MD B19
203 TOBYHANNA ARMY DEPOT	A	MONROE	PA B8
203 MCGUIRE AIR FORCE BASE	AF	BURLINGTON	NJ B12
203 DIX FORT	A	BURLINGTON/OCEAN	NJ B12
203 GIBBSBORO AIR FORCE STATION	AF	CAMDEN	NJ B10
203 GIBBSBORO FAMILY HOUSING ANNEX	AF	CAMDEN	NJ B10

TABLE 4

DOD INSTALLATIONS BY REGION

REGION - 2

ASR INSTALLATION	CM 9MSA	COUNTY	ST PROBLEMS
203 AIR DEVELOPMENT CTR WARMINSTER	N PHILADELPHIA	BUCKS	PA 810
203 WILLOW GROVE AIR RESERVE FACILITY	AF PHILADELPHIA	MONTGOMERY	PA 810
203 AIR STATION WILLOW GROVE	N PHILADELPHIA	MONTGOMERY	PA 810
203 DEF PERS SUPPORT CTR	A PHILADELPHIA	PHILADELPHIA	PA 810
203 FRANKFORD ARS	A PHILADELPHIA	PHILADELPHIA	PA 810
203 TACONY WAREHOUSE PENN	A PHILADELPHIA	PHILADELPHIA	PA 810
203 PHILADELPHIA IAP COMM STN (ANG)	AF PHILADELPHIA	PHILADELPHIA	PA 810
203 AVIATION SUPPLY OFFICE PHILADELPHIA	N PHILADELPHIA	PHILADELPHIA	PA 810
203 REGIONAL MEDICAL CENTER PHILADELPHIA	N PHILADELPHIA	PHILADELPHIA	PA 810
203 SHIPYARD PHILADELPHIA	N PHILADELPHIA	PHILADELPHIA	PA 810
203 SUPPORT ACT PHILADELPHIA	N PHILADELPHIA	PHILADELPHIA	PA 810
203 AIR PROPULSION TEST CTR TRENTON	N TRENTON	MERCER	NJ 810
203 NG NEW CASTLE	A WILMINGTON	NEW CASTLE	DE 810
203 GREATER WILMINGTON AIRPORT	AF WILMINGTON	NEW CASTLE	DE 810
203 PEDRICHTOWN SUPPORT FACIL	AF WILMINGTON	SALEM	NJ 810
204 STATE COLLEGE ANG STATION	AF	CENTRE	PA 814
204 FT INDIANTOWN GAP ANG STATION	AF	LEBANON	PA 816
204 BENTON AIR FORCE STATION	AF	SULLIVAN	PA 816
204 AIR FORCE PLANT NO 59	AF	ROONE	NY 813
204 CARLISLE BARRACKS	AF BINGHAMTON	CUMBERLAND	PA 817
204 NEW CUMBERLAND RECRUITING FAM HSG SITE	AF HARRISBURG	CUMBERLAND	PA 817
204 SHIPS PARTS CONTROL CTR MECHANICSHURG	N HARRISBURG	CUMBERLAND	PA 817
204 HARRISBURG INTERNATIONAL APT OLMSTED FLD	AF HARRISBURG	DAUPHIN	PA 816
204 INDIANTOWN GAP FORT	A HARRISBURG	LEBANON/DAUPHIN	PA 816
204 SCRANTON ARMY AMMUNITION PLANT	A	LACKAMANNA	PA 816
204 SHAVERTOWN FAMILY HOUSING SITE	AF NORTHEAST PENNSYLVANIA	LUZERNE	PA 816
204 NEW CUMBERLAND ARMY DEPOT	A YORK	YORK	PA 817
205 FIRST ARMY RECREATION AREA	A	SUSSEX	DE 819
205 NAVAL FACILITY LEWES	N	CALVERT	DE 819
205 SURFACE WEAPONS CENTER SOLOMONS	N	ANNE ARUNDEL	MD 818
205 MEADE FORT GEORGE G	A BALTIMORE	ANNE ARUNDEL	MD 818
205 DAVIDSONVILLE FAMILY HOUSING ANN	AF BALTIMORE	ANNE ARUNDEL	MD 818
205 GOVERNORS BRIDGE GLOBECOM ANNEX	N BALTIMORE	ANNE ARUNDEL	MD 818
205 NAVAL STATION ANNAPOLIS	N BALTIMORE	ANNE ARUNDEL	MD 818
205 SCOL/ACADEMY ANNAPOLIS	N BALTIMORE	ANNE ARUNDEL	MD 818
205 SHIP RESCH/DEVT CTR ANNAPOLIS DIV	N BALTIMORE	ANNE ARUNDEL	MD 818
205 AIR FORCE PLANT NO 50	AF BALTIMORE	BALTIMORE	MD 818
205 MARTIN AIRPORT AIR NATIONAL GUARD	AF BALTIMORE	BALTIMORE	MD 818
205 NAVAL HOSPITAL ANNAPOLIS	N BALTIMORE	ANNE ARUNDEL	MD 818
205 AERDGEN PROVING GROUND	A BALTIMORE	HARFORD	MD 817
205 AERDGEN PROVING GROUND EDGEWOOD	A BALTIMORE	HARFORD/BALTIMORE	MD 817
205 NAVAL AIR STA TANGIER IS	N	ACCOMACK	VA 819
205 FORT AP HILL VA	A	CAROLINE/ESSEX	VA 824
205 CAPE CHARLES AIR FORCE STATION	AF	NORTHAMPTON	VA 819
205 SHIP SHUAL ISLAND AIR FORCE HANGAR	AF	HAMPTON	VA 827
205 MONROE FORT	A NEWPORT NEWS-HAMPTON		

TABLE 4

DOD INSTALLATIONS BY REGION

REGION - 2

ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
205 LANGLEY AIR FORCE BASE	AF NEWPORT NEWS-HAMPTON	HAMPTON	VA 827
205 EUSTIS FORT	A NEWPORT NEWS-HAMPTON	NEWPORT NEWS	VA 827
205 LANGLEY FAMILY HOUSING ANNEX	AF NEWPORT NEWS-HAMPTON	YORK	VA 827
205 WEAPONS STATION YORKTOWN	N NEWPORT NEWS-HAMPTON	YORK	VA 827
205 NAVAL AIR STA ALF FENTRESS	N NORFOLK-VIRGINIA BEACH-PORTSMOUTH	CHESAPEAKE	VA 827
205 ADMIN COMD ARM FOR STAFF COLLEGE	N NORFOLK-VIRGINIA BEACH-PORTSMOUTH	NORFOLK	VA 827
205 AMPHIBIOUS BASE NORFOLK	N NORFOLK-VIRGINIA BEACH-PORTSMOUTH	NORFOLK	VA 827
205 COMM AREA MASTER STATION NORFOLK	N NORFOLK-VIRGINIA BEACH-PORTSMOUTH	NORFOLK	VA 827
205 FLT ASM TRNG CTR NORFOLK	N NORFOLK-VIRGINIA BEACH-PORTSMOUTH	NORFOLK	VA 827
205 MARCORPS CAMP ELMORE DET	N NORFOLK-VIRGINIA BEACH-PORTSMOUTH	NORFOLK	VA 827
205 NAVAL AIR STATION NORFOLK	N NORFOLK-VIRGINIA BEACH-PORTSMOUTH	NORFOLK	VA 827
205 NAVAL STATION NORFOLK	N NORFOLK-VIRGINIA BEACH-PORTSMOUTH	NORFOLK	VA 827
205 PUBLIC WORKS CTR NORFOLK	N NORFOLK-VIRGINIA BEACH-PORTSMOUTH	NORFOLK	VA 827
205 REGIONAL MED CTR PORTSMOUTH	N NORFOLK-VIRGINIA BEACH-PORTSMOUTH	NORFOLK	VA 827
205 SHIPYARD NORFOLK	N NORFOLK-VIRGINIA BEACH-PORTSMOUTH	NORFOLK	VA 827
205 SUPPLY CTR NORFOLK	N NORFOLK-VIRGINIA BEACH-PORTSMOUTH	NORFOLK	VA 827
205 STORY FORT	N NORFOLK-VIRGINIA BEACH-PORTSMOUTH	NORFOLK	VA 827
205 FLT COMBAT TRNG CTR ATLANTIC	A NORFOLK-VIRGINIA BEACH-PORTSMOUTH	VIRGINIA BEACH	VA 827
205 NAVAL AIR STATION VIRGINIA BEACH	N NORFOLK-VIRGINIA BEACH-PORTSMOUTH	VIRGINIA BEACH	VA 827
205 FORT PICKETT	N NORFOLK-VIRGINIA BEACH-PORTSMOUTH	VIRGINIA BEACH	VA 827
205 FORT LEE VA	A PETERSBURG-COLONIAL HEIGHTS-HOPE	NOTTO/BRUNS/DINW/	VA 826
205 FORT LEE AIR FORCE STATION	A PETERSBURG-COLONIAL HEIGHTS-HOPE	PRINCE GEORGE	VA 826
205 DEF GEN SUPPLY CENTER	AF PETERSBURG-COLONIAL HEIGHTS-HOPE	PRINCE GEORGE	VA 826
205 BYRD FIELD	A RICHMOND	CHESTERFIELD	VA 826
206 DETRICK FT	AF RICHMOND	HENRICO	VA 826
206 AIR TEST CENTER PATUXENT RIVER	A	FREDERICK	MD 822
206 AIR TEST CTR BAY FOREST TRKG SITE	N	ST MARYS	MD 822
206 AIR TEST CTR RLOODSWORTH IS	N	ST MARYS	MD 822
206 AIR TEST CTR CHESAPEAKE TRKG SITE	N	ST MARYS	MD 822
206 AIR TEST CTR POINT LOOKOUT TRKG SITE	N	ST MARYS	MD 822
206 AIR TEST CTR POINT NO POINT TRKG SITE	N	ST MARYS	MD 822
206 RITCHIE FT	A	WASHINGTON	MD 822
206 RITCHIE FT QUIKAUK STA A	A	WASHINGTON	MD 822
206 RITCHIE FT SHARPSBURG SITE	A	WASHINGTON	MD 822
206 LETTERKENNY ARMY DEPOT	A	FRANKLIN	PA 822
206 VINT HILL FAPMS STA	A	FAUGUET	VA 822
206 SURFACE WEAPONS CENTER DAHLGREN	N	KING GEORGE	VA 822
206 EASTERN MVA REGIONAL API	AF	BERKELEY	WV 822
206 MARTINSBURG FAMILY HOUSING SITE	AF	BERKELEY	WV 822
206 MCNAIR FORT LESLEY J	AF	DIST OF COL	DC 822
206 REED WALTER AMC	A	DIST OF COL	DC 822
206 BOLLING AIR FORCE BASE	A	DIST OF COL	DC 822
206 CHESAPEAKE STREET OFFICER HOUSING ANNEX	AF	DIST OF COL	DC 822
206 WILBURN FAMILY HOUSING ANNEX	AF	DIST OF COL	DC 822
206 COMMUNICATION UNIT CHELTENHAM	N	DIST OF COL	DC 822
206 DISTRICT COMMANDANT	N	DIST OF COL	DC 822

TABLE 4

DOD INSTALLATIONS BY REGION

REGION - 2

ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
206 MARCORPS BARRACKS WASHINGTON	N WASHINGTON	DIST OF COL	DC 822
206 NAVAL OBSERVATORY	N WASHINGTON	DIST OF COL	DC 822
206 RESEARCH LABORATORY	N WASHINGTON	DIST OF COL	DC 822
206 SECURITY STATION	N WASHINGTON	DIST OF COL	DC 822
206 HARRY DIAMOND TEST AREA	A WASHINGTON	CHARLES	MD 822
206 ORDNANCE STATION INDIAN HEAD	N WASHINGTON	CHARLES	MD 822
206 ORDNANCE STATION STUMP NECK	N WASHINGTON	CHARLES	MD 822
206 HARRY DIAMOND LABS	A WASHINGTON	MONTGOM/PRINCE GE	MD 822
206 DEFENSE MAPPING AGENCY	A WASHINGTON	MONTGOMERY	MD 822
206 REED WALTER AMC FOREST G	A WASHINGTON	MONTGOMERY	MD 822
206 REED WALTER AMC GLENHAVEN	A WASHINGTON	MONTGOMERY	MD 822
206 REGIONAL MEDICAL CENTER BETHESDA	N WASHINGTON	MONTGOMERY	MD 822
206 SHIP RESEARCH & DEVMT CTR BETHESDA	N WASHINGTON	MONTGOMERY	MD 822
206 SURFACE WEAPONS CENTER WHITE OAK	N WASHINGTON	MONTGOMERY	MD 822
206 SUITLAND ANNEX	A WASHINGTON	PRINCE GEORGES	MD 822
206 ANDREWS AIR FORCE BASE	AF WASHINGTON	PRINCE GEORGES	MD 822
206 BRANDYME FAMILI HOUSING ANNEX	AF WASHINGTON	PRINCE GEORGES	MD 822
206 BRANDYME GLORECOM ANNEX	AF WASHINGTON	PRINCE GEORGES	MD 822
206 FT MEADE FAMILI HOUSING ANNEX	AF WASHINGTON	PRINCE GEORGES	MD 822
206 SUITLAND HALL ADMINISTRATION ANNEX	A WASHINGTON	PRINCE GEORGES	MD 822
206 CAMERON STATION	A WASHINGTON	ALEXANDRIA	VA 822
206 ARLINGTON HALL STATION	A WASHINGTON	ARLINGTON	VA 822
206 ARLINGTON MAIL CEM	A WASHINGTON	ARLINGTON	VA 822
206 MYER FORT	A WASHINGTON	ARLINGTON	VA 822
206 MARCORPS HQDTRS HENDERSON HALL	A WASHINGTON	FAIRFAX	VA 822
206 BELVOIR FORT	A WASHINGTON	PRINCE WILLIAM	VA 822
206 HARRY DIAMOND LABS NOBRGE	A WASHINGTON	PRINCE WILLIAM	VA 822
206 MANASSAS COMMUNICATIONS FACILITY ANNEX	AF WASHINGTON	PRINCE WILLIAM	VA 822
206 MANASSAS FAMILI HOUSING ANNEX	AF WASHINGTON	PRINCE WILLIAM	VA 822
206 HOSPITAL QUANTICO	N WASHINGTON	PRINCE WILLIAM	VA 822
206 MARCORPS AIN STATION QUANTICO	N WASHINGTON	PRINCE WILLIAM	VA 822
206 MARCORPS DEV & EDUCN CMD QUANTICO	N WASHINGTON	PRINCE WILLIAM	VA 822

0000 INSTALLATIONS BY REGION

REGION - 3

A-68

TABLE a

DOD INSTALLATIONS BY REGION

REGION - 3

ASP INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
303 GORDON FT RECH AREA	A AUGUSTA	COLUM/JEFF/MCDUFF	GA A306
303 GORDON FT OLIVER AREA	A AUGUSTA	COLUMBIA	GA A306
303 DAU TIENG STAGEFIELD 04	A SAVANNAH	RICHMOND	GA A306
303 CU CHI STAGEFIELD 02	A SAVANNAH	BRYAN	GA A306
303 HUNTER ARMY AIRFIELD	A SAVANNAH	CHATHAM	GA A306
303 SAVANNAH AIR FORCE STATION	AF SAVANNAH	CHATHAM	GA A306
303 SAVANNAH ANG COMMUNICATIONS STATIONS	AF SAVANNAH	CHATHAM	GA A306
303 SAVANNAH ANG MUNICIPAL AIRPORT	AF SAVANNAH	CHATHAM	GA A306
303 SAVANNAH BACHELOR HOUSING ANX	AF SAVANNAH	CHATHAM	GA A306
303 SAVANNAH FAMILY HOUSING ANX	AF SAVANNAH	CHATHAM	GA A306
303 SAVANNAH FAMILY HOUSING SITE	AF SAVANNAH	CHATHAM	GA A306
303 LOC NINM STAGEFIELD 03	A SAVANNAH	EFFINGHAM	GA A306
303 STEWART FORT	A SAVANNAH	LIB/LMG/BRYN/EVNI	GA A306 A307
303 MILITARY OCEAN TML KINGS BAY	A	CAMDEN	GA A307
303 SCOL/SUPPLY COMPS ATHENS	N	CLARKE	GA A307
303 BRUNSWICK FAMILY HOUSING SITE	AF	GLYNN	GA A307
303 MCKINNON AIRPORT COMMUNICATIONS STATION	AF	GLYNN	GA A307
303 LEWIS B WILSON AIRPORT ANG	AF	BIBB	GA A307
303 ROBINS AIR FORCE BASE	AF MACON	HOUSTON	GA A307
304 NAVAL AIR STATION PINECASTLE RANGE	N	MARION	FL A308
304 NAVAL AIR STA PUTNAM TARGET	N	PUTNAM	FL A308
304 NAVAL AIR STA RODMAN TARGET	N	PUTNAM	FL A308
304 NAVAL AIR STA LAKE GEORGE TARGET	N	VOLUSTA	FL A308
304 BLANDING CAMP	N DAYTONA BEACH	CLAY	FL A308
304 JACKSONVILLE AIR FORCE STATION	A JACKSONVILLE	CLAY	FL A308
304 JACKSONVILLE FAMILY HOUSING ANNEX	AF JACKSONVILLE	CLAY	FL A308
304 NAVAL AIR STA STEVENS LAKE TARGET	N JACKSONVILLE	CLAY	FL A308
304 JACKSONVILLE IAP ANG	N JACKSONVILLE	DUVAL	FL A308
304 NAVAL AIR STA OLF WHITEHOUSE	N JACKSONVILLE	DUVAL	FL A308
304 NAVAL AIR STATION CECIL FIELD	N JACKSONVILLE	DUVAL	FL A308
304 NAVAL AIR STATION JACKSONVILLE	N JACKSONVILLE	DUVAL	FL A308
304 NAVAL STATION MAYPORT	N JACKSONVILLE	DUVAL	FL A308
304 REGIONAL MEDICAL CENTER JACKSONVILLE	N JACKSONVILLE	DUVAL	FL A308
304 CAPE CANAVERAL AIR FORCE STATION	AF MELBOURNE-TITUSVILLE-COcoa	BREVARD	FL A308
304 PATRICK AIR FORCE BASE	AF MELBOURNE-TITUSVILLE-COcoa	BREVARD	FL A308
304 REGIONAL MEDICAL CENTER ORLANDO	N ORLANDO	ORANGE	FL A308
304 TRAINING CENTER ORLANDO	N ORLANDO	ORANGE	FL A308
304 RHANDON MEDICAL FOOD ANX	AF TAMPA-ST PETERSBURG	HILLSBOROUGH	FL A310
304 MACDILL AIR FORCE BASE	AF TAMPA-ST PETERSBURG	HILLSBOROUGH	FL A310
304 SPENCE AF AUXILIARY FIELD	AF	COLQUITT	GA A311
304 MOODY AIR FORCE BASE	AF	LOWNDES	GA A311
304 GAINESVILLE AFFOTC FAMILY HSG SITE	AF GAINESVILLE	ALACHUA	FL A311
305 AVON PARK AIR FORCE RANGE	AF	HIGHLANDS	FL A309
305 AVON PARK AUXILIARY AIRFIELD	AF	HIGHLANDS	FL A309
305 CUDJOE KEY AIR FORCE STATION	AF	MONROE	FL A309

TABLE 4

DOD INSTALLATIONS BY REGION

REGION - 3

ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
305 NAVAL AIR STA MARQUESAS KEYS	N	MONROE	FL A309
305 NAVAL AIR STATION KEY WEST	N	MONROE	FL A309
305 NAVAL HOSPITAL KEY WEST	N	MONROE	FL A309
305 HOMESTEAD AIR FORCE BASE	AF MIAMI	DADE	FL A309
305 MIAMI BACHELOR HSG SITE	AF MIAMI	DADE	FL A309
305 RICHMOND AF STATION	N MIAMI	DADE	FL A309
305 SECURITY GROUP ACT HOMESTEAD	AF TALLAHASSEE	DADE	FL A309
306 TALLAHASSEE BACHELOR HSG SITE	A	DADE	FL A309
306 ALLEN FIELD	A	DADE	FL A309
306 10TH FIELD	A	DADE	FL A309
306 HALL AIR NATIONAL GUARD STATION	AF	DADE	FL A309
306 BENNING FORT ING AREA	A	DADE	FL A309
306 MARCORPS LOGISTICS SUPPORT ACT ALBANY	A	DADE	FL A309
306 GILLEN FORT	A	DADE	FL A309
306 AIR FORCE PLANT NO 6	A	DADE	FL A309
306 DOBBINS AIR FORCE BASE	A	DADE	FL A309
306 MCCOLLUM ANG STATION	A	DADE	FL A309
306 NAVAL AIR STATION ATLANTA	A	DADE	FL A309
306 MCPHERSON FT	A	DADE	FL A309
306 BENNING FORT	A	DADE	FL A309
306 RUNKLE ROBERT LESLIE TAC SITE	A	DADE	FL A309
307 SHELLEY FIELD	A	DADE	FL A309
307 RUCKER FORT	A	DADE	FL A309
307 NAVAL AIR STA OLF MIDDLETON	A	DADE	FL A309
307 CAIRNS AAF	A	DADE	FL A309
307 GOLDBERG FIELD	A	DADE	FL A309
307 HUNT FIELD	A	DADE	FL A309
307 NAVAL AIR STA OLF BREWTON	A	DADE	FL A309
307 HIGH BLUFF	A	DADE	FL A309
307 HIGH FALLS	A	DADE	FL A309
307 TAC X	A	DADE	FL A309
307 LOUISVILLE RM STAGEFIELD	A	DADE	FL A309
307 BENNING FORT MORENO POINT	A	DADE	FL A309
307 EGLIN AF AUXILIARY FIELD NO 2	A	DADE	FL A309
307 EGLIN AF AUXILIARY FIELD NO 3	A	DADE	FL A309
307 EGLIN AF AUXILIARY FIELD NO 6	A	DADE	FL A309
307 EGLIN AF AUXILIARY FIELD NO 9	A	DADE	FL A309
307 EGLIN AF FORCE BASE	A	DADE	FL A309
307 COVE GARDENS FAMILY HOUSING ANNEX	A	DADE	FL A309
307 TYNDALL AIR FORCE BASE	A	DADE	FL A309
307 COASTAL SYSTEMS LAB PANAMA CITY	A	DADE	FL A309
307 AEROSPACE & REG MED CTR PANASCOLA	A	DADE	FL A309
307 AIR STATION SAUFLEY FIELD	A	DADE	FL A309
307 NAVAL AIR STA OLF 4A	A	DADE	FL A309

TABLE 4

DOD INSTALLATIONS BY REGION

REGION - 3

ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
307 NAVAL AIR STA OLF 8A	N PENSACOLA	ESCAMBRIA	FL A314
307 NAVAL AIR STA OLF BRONSON	N PENSACOLA	ESCAMBRIA	FL A314
307 NAVAL AIR STA OLF SITE 6	N PENSACOLA	ESCAMBRIA	FL A314
307 NAVAL AIR STATION PENSACOLA	N PENSACOLA	ESCAMBRIA	FL A314
307 PUBLIC WORKS CTR PENSACOLA	N PENSACOLA	ESCAMBRIA	FL A314
307 TECHNICAL TRNG CTR CORRY STA	N PENSACOLA	ESCAMBRIA	FL A314
307 EGLIN AF AUXILIARY FIELD NO 10	AF PENSACOLA	SANTA ROSA	FL A314
307 NAVAL AIR STA OLF CHOCTAW	N PENSACOLA	SANTA ROSA	FL A314
307 NAVAL AIR STA OLF HOLLY	N PENSACOLA	SANTA ROSA	FL A314
307 NAVAL AIR STA OLF SANTA	N PENSACOLA	SANTA ROSA	FL A314
307 NAVAL AIR STA OLF SITE 2	N PENSACOLA	SANTA ROSA	FL A314
307 NAVAL AIR STA OLF SPENCER	N PENSACOLA	SANTA ROSA	FL A314
307 NAVAL AIR STATION OLF SITE 1	N PENSACOLA	SANTA ROSA	FL A314
307 NAVAL AIR STATION WHITING FIELD	N PENSACOLA	SANTA ROSA	FL A314
307 CHATR AIR FORCE BASE	AF	DALLAS	AL A315
307 VAIDEN AIR FORCE AUXIL AIRFIELD	AF	PERRY	AL A315
307 ALABAMA AAP	A	TALLADEGA	AL A315
307 COOSA RIV STORAGE ANNEX	A	TALLADEGA	AL A315
307 MCPHERSON FT REC AREA	A	BARTON	GA A315
307 ANNISTON ARMY DEPOT	A	CALHOUN	AL A315
307 MCCLELLAN FORT	A	ANNISTON	AL A315
307 MARTIN AIR NATIONAL GUARD STATION	AF	GADSDEN	AL A315
307 DANIELLY FIELD AIR NATIONAL GUARD	AF	ETOWAH	AL A315
307 GUNTER AIR FORCE BASE	AF	MONTGOMERY	AL A315
307 HUNTER LOOP COMMUNICATIONS FACILITY ANNE	AF	MONTGOMERY	AL A315
307 MAXWELL AIR FORCE BASE	AF	MONTGOMERY	AL A315
307 MAXWELL FAMILY HOUSING ANNEX	AF	MONTGOMERY	AL A315
308 NAVAL AIR STA OLF BRAVO	N	KEMPER	MS A316A
308 COLUMBUS AIR FORCE BASE	N	LOWNDES	MS A316A
308 NAVAL AIR STATION OLF ALPHA	N	NOXURFE	MS A316A
308 BIRMINGHAM MAP AIR NATIONAL GUARD	AF	JEFFERSON	AL A316A
308 NAVAL AIR STA OLF BARIN	N	BALDWIN	AL A316C
308 NAVAL AIR STA OLF FAIRCLOTH	N	BALDWIN	AL A316C
308 NAVAL AIR STA OLF KAISER	N	BALDWIN	AL A316C
308 NAVAL AIR STA OLF KINGS	N	BALDWIN	AL A316C
308 NAVAL AIR STA OLF MAGNOLIA	N	BALDWIN	AL A316C
308 NAVAL AIR STA OLF SILVER HILL	N	BALDWIN	AL A316C
308 NAVAL AIR STA OLF SUMMERDALE	N	BALDWIN	AL A316C
308 NAVAL AIR STA OLF WOLFE	N	BALDWIN	AL A316C
308 DAUPHIN ISLAND AIR FORCE STATION	AF	MOBILE	AL A316C
309 NG CAMP SHELBY	A	FORREST/PERRY	MS A317
309 KEY FIELD AIR NATIONAL GUARD	AF	LAUDERDALE	MS A317
309 MERIDIAN FAMILY HOUSING SITE	AF	LAUDERDALE	MS A317
309 AIR STATION MERIDIAN	N	LAUDERDALE	MS A317
309 GULFPORT MAP ANG PERMANENT TRAINING BASE	AF	HARRISON	MS A317
309 KEESLER AIR FORCE BASE	AF	HARRISON	MS A317

TABLE 4

DOD INSTALLATIONS BY REGION

REGION - 3

ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
309 KEESLER TRAINING ANNEX NO 1	AF GULFPORT-BILOXI	HARRISON	MS A317
309 CONST BATTALN CTR DE SOTO NATL FOREST	N GULFPORT-BILOXI	HARRISON	MS A317
309 CONST BATTALN CTR GULFPORT	N GULFPORT-BILOXI	HARRISON	MS A317
309 NAVAL HOME	N GULFPORT-BILOXI	HARRISON	MS A317
309 ALLEN C THOMPSON FIELD	AF JACKSON	RANKIN	MS A318

TABLE 4

DOD INSTALLATIONS BY REGION

REGION - 4

ASR INSTALLATION

ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
401 FINLAND AIR FORCE STATION	AF	LAKE	MN A1
401 DULUTH AIR NATIONAL GUARD BASE	AF	ST LOUIS	MN A2
401 DULUTH FAMILY HOUSING ANNEX	AF	ST LOUIS	MN A2
401 DULUTH INTERNATIONAL AIRPORT	AF	CHIPPWA	MI A4
401 NG CAMP LUCAS	A	CHIPPWA	MI A4
401 KINCHLOE AIR FORCE BASE	AF	CHIPPWA	MI A4
401 SAULT STE MARIE AIR FORCE STATION	AF	CHIPPWA	MI A4
401 SAULT STE MARIE COMM FACILITY ANNEX	AF	CHIPPWA	MI A4
401 CALUMET AIR FORCE STATION	AF	KEMENAM	MI A4
401 CALUMET FAMILY HOUSING ANX	AF	KEMENAM	MI A4
401 K I SAWYER AIR FORCE BASE	AF	MARQUETTE	MI A4
403 NG MAINTENANCE CENTER	A	COOK	IL A9
403 CHICAGO-OHARE FAMILY HSG SITE	AF	COOK	IL A9
403 O HARE INTERNATIONAL AIRPORT	AF	COOK	IL A9
403 AIR STATION GLENVIEW	N	COOK	IL A9
403 SHERIDAN FORT	A	LAKE	IL A9
403 PUBLIC WORKS CTR GREAT LAKES	N	LAKE	IL A9
403 REGIONAL MEDICAL CENTER GREAT LAKES	N	LAKE	IL A9
403 TRAINING CENTER GREAT LAKES	N	LAKE	IL A9
403 JOLIET AAP ELWOOD	A	WILL	IL A9
403 JOLIET AAP KANKAKEE	A	WILL	IL A9
403 GEN MITCHELL FIELD	AF	MILWAUKEE	WI A8
403 GREENFIELD FAMILY HOUSING SITE	AF	MILWAUKEE	WI A8
403 MILWAUKEE AHS WATA RHG SITE	AF	MILWAUKEE	WI A8
403 MILWAUKEE FAMILY HOUSING SITE	AF	MILWAUKEE	WI A8
403 MILWAUKEE RECRUITING FAM HSG SITE	AF	MILWAUKEE	WI A8
404 WK KELLOGG REGIONAL AIRFIELD	AF	WAUKESHA	WI A10
404 CUSTER FORT	A	CALHOUN	MI A10
404 BAYSHORE RADAR BOMB SCORING SITE	AF	CALHOUN-KALAMAZOO	MI A10
404 EMPIRE AIR FORCE STATION	AF	EMMET	MI A13
404 EMPIRE FAMILY HOUSING ANX	AF	LEELANAU	MI A13
405 PHELPS COLLINS AIRPORT ANG	AF	LEELANAU	MI A13
405 NG GRAYLING AAF	A	ALPENA	MI A13
405 PORT AUSTIN AIR FORCE STATION	AF	CRAWFORD	MI A15
405 PORT AUSTIN FAMILY HOUSING ANX	AF	HURON	MI A15
405 WURTSWORTH AIR FORCE BASE	AF	HURON	MI A15
406 DETROIT ARSENAL	A	TOSCO	MI A16
406 DETROIT ARSENAL TANK PLANT	A	MACOMB	MI A16
406 MICHIGAN ARMY MSL PLANT	A	MACOMB	MI A16
406 SELFRIDGE ANG BASE	AF	MACOMB	MI A16
406 SELFRIDGE FAMILY HOUSING ANNEX NO 2	AF	MACOMB	MI A16
406 PONTIAC STOR ACT	A	OAKLAND	MI A16
406 FT WAYNE MUNICIPAL AIRPORT	AF	ALLEN	IN A18
406 LIMA ARMY MOD CEN	A	ALLEN	OH A18
406 TOLEDO EXPRESS AIRPORT ANG	AF	FULTON	OH A18

TABLE 4
DOD INSTALLATIONS BY REGION
REGION - 4

ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
406 AIR FORCE PLANT NO 27	AF TOLEDO	LUCAS	OH A18
406 PERRY CAMP ERIE ARMY DEPOT	A TOLEDO	OTTAWA	OH A19
406 CAMP PERRY ANG STATION	AF TOLEDO	OTTAWA	OH A19
407 NG AKRON CANTON APT	A AKRON	SUMMIT	OH A20
407 RAVENNA ARMY AMMUNITION PLANT	A AKRON/YOUNGSTOWN-WARREN	PORTAGE/TRUMBULL	OH A20
407 AIR FORCE PLANT NO 47	AF CLEVELAND	CUYAHOGA	OH A20
407 FINANCE CENTER CLEVELAND	N CLEVELAND	CUYAHOGA	OH A20
407 AIR FORCE PLANT NO 49	AF BUFFALO	ERIE	NY A23
407 AIR FORCE PLANT NO 38	AF BUFFALO	NIAGARA	NY A27
407 LOCKPORT AIR FORCE STATION	AF BUFFALO	NIAGARA	NY A27
407 LOCKPORT FAMILY HOUSING ANNEX	AF BUFFALO	NIAGARA	NY A27
407 NIAGARA FALLS INTERNATIONAL AIRPORT	AF BUFFALO	NIAGARA	NY A27
407 YOUNGSTOWN TEST SITE	A	SENECA	NY A26
408 SENECA ARMY DEPOT	N	YATES	NY A26
408 UNDERWATER SYS CTR LAKE SENECA	AF SYRACUSE	MADISON	NY A26
408 STOCKBRIDGE TEST ANNEX	AF SYRACUSE	ONONDAGA	NY A26
408 HANCOCK FAMILY HOUSING ANX	AF SYRACUSE	ONONDAGA	NY A26
408 HANCOCK FIELD MCC 10	A	JEFF/LEWIS/ST LAW	NY A28
408 DRUM FORT	A	JEFFERSON	NY A28
408 GREAT BEND RADAR BOMB SCORING SITE	AF	JEFFERSON	NY A28
408 WATERTOWN AIR FORCE STATION	AF	JEFFERSON	NY A28

TABLE 4

DND INSTALLATIONS BY REGION

REGION - 5

ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
502 GREATER PITTSBURGH ANG BASE	AF PITTSBURGH	ALLEGHENY	PA A3
502 GREATER PITTSBURGH INTERNATIONAL AIRPORT	AF PITTSBURGH	ALLEGHENY	PA A3
502 HAYS ARMY AMMUNITION PLT	A PITTSBURGH	WESTMORELAND	PA A1
502 YOUNGSTOWN MUNICIPAL AIRPORT	AF YOUNGSTOWN-WARREN	TRUMBULL	OH A2
502 AIR FORCE PLANT NO 36	AF CINCINNATI	HAMILTON	OH A9
502 BLUE ASH ANG STATION	AF CINCINNATI	HAMILTON	OH A9
503 NEWARK AIR FORCE STATION	AF	LICKING	OH A5
503 ZANESVILLE ANG STATION	AF	MUSKINGUM	OH A5
503 MANSFIELD LAHM AIRPORT ANG	AF MANSFIELD	RICHLAND	OH A5
503 NG CAMP SHERMAN	A	ROSS	OH A10
503 DEF CONSTR SUP CTR	A	FRANKLIN	OH A10
503 RICKENBACKER AIR FORCE BASE	A COLUMBUS	FRANKLIN	OH A10
503 WRIGHT PATTERSON AIR FORCE BASE	AF COLUMBUS	GREENE	OH A9
503 GENTILE DEFENSE ELECTRONICS SUPPLY CTR	AF DAYTON	GREENE	OH A9
503 SPRINGFIELD FAMILY HOUSING SITE NO 1	AF DAYTON	MONTGOMERY	OH A11
503 SPRINGFIELD MUNICIPAL AIRPORT ANG	AF SPRINGFIELD	CLARK	OH A11
504 RADFORD ARMY AMMUNITION PLANT	A	CLARK	OH A11
504 RADFORD ARMY AMMO PLT NEW RIVER	A	MONTGOMERY/PULASKI	VA A6
504 ELKVIEW FAMILY HOUSING SITE	A	PULASKI	VA A6
504 KANAWHA COUNTY AIRPORT (ANG)	AF CHARLESTON	KANAWHA	WV A7
505 BLUE GRASS DEPOT ACTIVITY	A	KANAWHA	WV A7
505 RICHMOND RADAR BOMB SCORING SITE	A	MADISON	KY A13
505 LEX BLUE GRASS D ACTIVITY	AF	MADISON	KY A13
505 INDIANA ARMY AMMUNITION PLANT	A	FAYETTE/BOURBON	KY A12
505 JEFFERSON PROVING GROUND	A	CLARK	IN A15
505 KNOX FORT	A	JEFF/RIPLY/JENNI	IN A14
505 LOUISVILLE FAMILY HOUSING ANNEX	A LOUISVILLE	HARDIN/MEADE/BULL	KY A15
505 LOUISVILLE FAMILY HOUSING SITE	AF LOUISVILLE	JEFFERSON	KY A15
505 STANDFORD FIELD ANG	AF LOUISVILLE	JEFFERSON	KY A15
505 ORDNANCE STATION LOUISVILLE	AF LOUISVILLE	JEFFERSON	KY A15
506 WEAPONS SUPPORT CENTER CRANE	N	MARTIN	IN A14
506 WEAPONS SUPPORT CENTER BLOOMINGTON	N	MONROE	IN A14
506 ATTERBURY RES FORCES TNG AREA	N	JOHNSON/BARTHO/BR	IN A14
506 HARRISON FORT BENJAMIN	A INDIANAPOLIS	MARION	IN A14
506 AVIONICS FACILITY INDIANAPOLIS	N INDIANAPOLIS	MARION	IN A14
506 GRISSOM AIR FORCE BASE	AF	MIAMI	IN A14
506 CHANUTE AIR FORCE BASE	AF	CHAMPAIGN	IL A14
506 CHANUTE FAMILY HOUSING ANNEX	AF CHAMPAIGN-URBANA-RANTOUL	CHAMPAIGN	IL A14
506 WEAPONS SUPPORT CENTER DUGGER	N INDIANAPOLIS	SULLIVAN	IN A14
506 NEWPORT ARP	A TERRE HAUTE	VERMILLION	IN A14
506 HULMAN FIELD	AF TERRE HAUTE	VIGO	IN A14
507 CAMPBELL FT	A CLARKSVILLE-HOPKINSVILLE	CHRI/TRIG&MON/STE	KY A18
507 NASHVILLE METROPOLITAN AIRPORT	AF NASHVILLE-DAVIDSON	DAVIDSON	TN A18

TABLE 4

DOD INSTALLATIONS BY REGION

REGION - 6

ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
601 HOLSTON ARMY AMMO PLT	A JOHNSON CITY-KINGSPORT-BRISTOL	SULLIVAN/HAWKINS	TN A1
601 ALCOA AIR NATIONAL GUARD STATION	AF KNOXVILLE	BLOUNT	TN
601 KNOXVILLE FAMILY HOUSING SITE	AF KNOXVILLE	BLOUNT	TN
601 MCGHEE TYSON AIRPORT	AF KNOXVILLE	BLOUNT	TN
601 NG CATOOSA RIFLE RANGE	A CHATTANOOGA	CATOOSA	GA A5
601 VOLUNTEER AAP	A CHATTANOOGA	HAMILTON	TN A5
601 CHATTANOOGA FAMILY HOUSING SITE	AF CHATTANOOGA	HAMILTON	TN A5
601 LOVELL FIELD AIR NATIONAL GUARD	AF CHATTANOOGA	HAMILTON	TN A5
602 PHOSPHATE DEV WKS	A FLORENCE	COLBERT	AL
602 REDSTONE ARSENAL	A HUNTSVILLE	MADISON	AL
602 ARNOLD ENGINEERING DEVELOP CENT	AF	COFFEE	TN

TABLE 4

DOD INSTALLATIONS BY REGION

REGION - 7

ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
701 MINNEAPOLIS FAMILY HOUSING SITE	AF MINNEAPOLIS-ST PAUL	HENNEPIN	MN 823
701 MINNEAPOLIS RECRUITING FAM HSG SITE	AF MINNEAPOLIS-ST PAUL	HENNEPIN	MN 823
701 MINNEAPOLIS ST PAUL INTL APT	AF MINNEAPOLIS-ST PAUL	HENNEPIN	MN 823
701 TWIN CITIES AR AMMUNITION PLT	A MINNEAPOLIS-ST PAUL	RAMSEY	MN 823
701 ROSEVILLE BACHELOR HSG SITE	AF MINNEAPOLIS-ST PAUL	RAMSEY	MN 823
702 MINNEAPOLIS AFOTC FAM HSG SITE	AF	RICE	MN 823
702 VOLK FIELD AIR NATIONAL GUARD BASE	AF	JUNEAU	MN 823
702 ANTIGO AIR FORCE STATION	AF	MARATHON	WI 118
702 ANTIGO COMMUNICATIONS FACILITY ANNEX	AF	MARATHON	WI 119
702 MCCOY FORT	A	MONROE	WI 117
702 BADGER ARMY AMMUNITION PLANT	A	SAUK	WI 118
703 SAVANNA ARMY DEPOT	A	CARR/JO DAV	IL 11
703 TRUAX FIELD	A	DANE	WI 116
703 FORT DODGE AIR NATIONAL GUARD	AF	WEBSTER	IA 134
703 DES MOINES FORT	A	POLK	IA 134
703 DES MOINES MUNICIPAL AIRPORT ANG	AF DES MOINES	POLK	IA 134
703 IOWA AAP	A	DES MOINES	IA 134
703 ROCK ISLAND ARS	A	DES MOINES	IA 134
704 GREATER PEORIA AIRPORT ANG	A	ROCK ISLAND	IL 113
704 CAPITAL MUNICIPAL AIRPORT ANG	AF PEORIA	PEORIA	IL 113
704 NG LINCOLN ORD DEPOT	A SPRINGFIELD	SANGAMON	IL 87
705 USA ST LOUIS AREA SUPPORT CTN	A ST LOUIS	SANGAMON	IL 87
705 SCOTT AIR FORCE BASE	AF ST LOUIS	MADISON	IL 13
705 GATEWAY ARMY AMMUNITION PLANT	A ST LOUIS	ST CLAIR	IL 13
705 WELDON SPRING MES FCS TNG	A ST LOUIS	ST CHARLES	MO 13
705 ST LOUIS AAP	A ST LOUIS	ST CHARLES	MO 13
705 AIR FORCE PLANT NO 84	AF ST LOUIS	ST LOUIS	MO 13
705 JEFFERSON BARRACKS ANG STATION	AF ST LOUIS	ST LOUIS	MO 13
705 LAMBERT ST LOUIS IAP ANG	AF ST LOUIS	ST LOUIS	MO 13
705 ST LOUIS AIR FORCE STATION	AF ST LOUIS	ST LOUIS	MO 13
705 ST LOUIS FAMILY HOUSING ANX	AF ST LOUIS	ST LOUIS	MO 13
705 WEBSTER GROVES FAMILY HOUSING SITE	AF ST LOUIS	ST LOUIS	MO 13

TABLE 4

DOD INSTALLATIONS BY REGION

REGION - 8

ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
801 MILAN ARMY AMMUNITION PLANT	A	CARROLL/GIBSON	TN A1-6
801 DEFENSE DEPOT MEMPHIS	A	SHELBY	TN A1-7 A1-8 A1-9
801 MEMPHIS INTERNATIONAL AIRPORT	AF MEMPHIS	SHELBY	TN A1-8
801 AIR STATION MEMPHIS	N MEMPHIS	SHELBY	TN A1-7
801 REGIONAL MEDICAL CENTER MEMPHIS	N MEMPHIS	SHELBY	TN A1-7
801 BLYTHEVILLE AIR FORCE BASE	AF	MISSISSIPPI	AR R1-16
802 NG CAMP MC CAIN	A	GRENADA	MS A2-1 A2-3
802 HOT SPRING MEMORIAL FIELD ANG	AF	GARLAND	AR
802 HOT SPRINGS FAMILY HOUSING SITE	AF	GARLAND	AR
802 RUSTON HACHELOR HSG SITE	AF	LINCOLN	LA
802 CLATBORNE AIR FORCE RANGE	AF ALEXANDRIA	RAPIDES	LA
802 ENGLAND AIR FORCE BASE	AF ALEXANDRIA	RAPIDES	LA
802 NG CAMP LIVINGSTON	A ALEXANDRIA	RAPIDES/GRANT	LA
802 PINE BLUFF ARS INO	A PINE BLUFF	JEFFERSON	AR
803 HAMMOND ANG COMMUNICATION STATION	AF	TANGIPAHOA	LA
803 POLK FORT	A	VERNON/SARINE/NAT	LA ***
803 LAKE CHARLES AIR FORCE STATION	AF LAKE CHARLES	CALCASIEU	LA A3-7
803 NEW ORLEANS NAS ANG	AF	PLAQUEMINES	LA A3-1
803 NAVAL AIR STATION NEW ORLEANS	N	PLAQUEMINES	LA A3-1
803 NEW ORLEANS ARMY BASE	A NEW ORLEANS	ORLEANS	LA A3-1
803 JACKSON BARRACKS ANG STATION	AF NEW ORLEANS	ORLEANS	LA A3-1
803 KEESLER OFFICER HOUSING ANNEX	AF NEW ORLEANS	ORLEANS	LA A3-1
803 NEW ORLEANS OLCA OFFICE	AF NEW ORLEANS	ORLEANS	LA A3-1
803 SUPPORT ACT NEW ORLEANS	N NEW ORLEANS	ORLEANS	LA A3-1

TABLE 4
DOD INSTALLATIONS BY REGION
REGION - 9

ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
901 FORTUNA AIR FORCE STATION	AF	DIVIDE	ND B1
901 MINOT AIR FORCE BASE	AF	WARD	ND A4
901 MINOT AIR FORCE STATION	AF	WARD	ND A4
901 MICKELSON STANLEY R SFG RSL 1	A	CAVALIER	ND
901 MICKELSON STANLEY R SFG RSL 2	A	CAVALIER	ND A14
901 US ARMY SAFEGUARD CMD MSR	A	CAVALIER	ND A14
901 US ARMY SAFEGUARD CMD RSL 3	A	CAVALIER	ND A14
901 US ARMY SAFEGUARD CMD PAR	A	PEMBINA	ND A15
901 FINLEY AIR FORCE STATION	AF	STEELE	ND
901 FINLEY FAMILY HOUSING ANNEX	AF	STEELE	ND
901 US ARMY SAFEGUARD CMD RSL 4	A	WALSH	ND A14
901 US ARMY SAFEGUARD CMD MTR	A	WALSH	ND B13
901 HECTOR FIELD AIR NATIONAL GUARD	AF	CASS	ND A9
901 GRAND FORKS AIR FORCE BASE	AF	GRAND FORKS	ND A16
901 BAUDETTE AIR FORCE STATION	AF	LAKE OF WOOD	MN A27
901 BAUDETTE FAMILY HOUSING ANNEX	AF	LAKE OF WOOD	MN A27

TABLE 4

DOD INSTALLATIONS BY REGION

REGION - 10

ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
1001 HAVRE AIR FORCE STATION	AF	HILL	MT
1001 HAVRE FAMILY HOUSING ANX	AF	HILL	MT
1001 GLASGOW AIR FORCE BASE	AF	VALLEY	MT
1001 OPHEIM AIR FORCE STATION	AF	VALLEY	MT
1002 NG FT WM HENRY HARRISON	A	LEWIS AND CLARK	MT
1002 GREAT FALLS COMMUNICATIONS FACILITY SITE	AF	CASCADE	MT R12
1002 GREAT FALLS IAP ANG	AF	CASCADE	MT B12
1002 GREAT FALLS IAP ANG	AF	CASCADE	MT B12
1002 MALMSTROM AIR FORCE BASE	AF	MEADE	SD
1005 ELLSMORTH FAMILY HOUSING ANNEX NR 2	AF	PENNINGTON	SD
1005 ELLSMORTH FAMILY HOUSING ANNEX NR 4	AF	PENNINGTON	SD
1005 ELLSMORTH AIR FORCE BASE	AF	PENNINGTON	SD
1005 ELLSMORTH FAMILY HOUSING ANNEX NR 3	AF	RURLIGH	SD
1005 ELLSMORTH FAMILY HOUSING ANNEX NR 3	AF	RURLIGH	SD
1005 BISMARCK RADAR HOMB SCORING SITE	AF	SHANNON	SD A2
1005 BADLANDS AIR FORCE BASE	AF	MINNEHAHA	SD A3
1006 JOE FOSS FIELD ANG	AF	LARAMIE	WY
1007 CHEYENNE MUNICIPAL AIRPORT ANG	AF	LARAMIE	WY
1007 FRANCIS E WARREN AIR FORCE BASE	AF	ADAMS	CO B23
1007 FITZSIMMONS ARMY MEDICAL CENTER	AF	ADAMS	CO B23
1007 ROCKY MTN ARS	A	ARAPAHOE	CO B23
1007 BUCKLEY AIR NATIONAL GUARD BASE	AF	ARAPAHOE	CO B23
1007 LOWRY TRAINING ANNEX	AF	BOULDER	CO B23
1007 BOULDER RACHELOR HSG SITE	AF	BOULDER	CO B23
1007 LONGMONT FAMILY HOUSING SITE	AF	BOULDER	CO B23
1007 LOWRY AIR FORCE BASE	AF	HALL	NE B25
1007 LOWRY AIR FORCE BASE	AF	HALL	NE B25
1008 CORNHUSKER AR AMMUNITION PLT	A	SAUNDERS	NE B24
1008 NG MEAD	A	LANCASTER	NE
1008 LINCOLN BACHELOR HSG SITE	AF	LANCASTER	NE
1008 LINCOLN MUNICIPAL AIRPORT (ANG)	AF	LANCASTER	NE
1009 OFFUTT AIR FORCE BASE	AF	SARPY	NE B22
1009 OFFUTT FAMILY HOUSING ANNEX	AF	SARPY	NE B22
1009 SIOUX CITY MUNICIPAL AIRPORT ANG	AF	WOODBURY	IA
1009 DEF IND PLT EGP FAC	A	ATCHISON	KS
1009 ROSECRANS MEMORIAL AIRPORT	AF	BUCHANAN	MO
1010 SCHILLING MANOR	A	SALINE	KS B27
1010 SCHILLING FAMILY HOUSING SITE	AF	SALINE	KS B27
1010 SMOKY HILL ANG RANGE	AF	SALINE	KS B27
1010 RILEY FORT	A	GEARY/RILEY	KS
1010 LEAVENWORTH FORT	A	LEAVENWORTH	KS
1010 HASTINGS HOUSING SITE	AF	ADAMS	NE A5
1010 HASTINGS RADAR BOMB SCORING SITE	AF	ADAMS	NE A5
1010 FORBES FIELD ANG	AF	SHAWNEE	KS
1011 WOOD FT LEONARD REC AR 02	A	CAMDEN	MO A7
1011 WOOD FT LEONARD	A	LACLEDE/PHELPS/PU	MO
1011 NG CAMP CLARK	A	VERNON	MO
1011 WHITEMAN AIR FORCE BASE	AF	JOHNSON	MO
1011 SUNFLOWER AAP	A	JOHNSON	KS B28

TABLE 4

ODD INSTALLATIONS BY REGION

REGION - 10

ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
1011 OLATHE FAMILY HOUSING SITE	AF KANSAS CITY	JOHNSON	K3 828
1011 BELTON TRAINING ANNEX	AF KANSAS CITY	CASS	MO 828
1011 LAKE CITY ARMY AMMUNITION PLT	A KANSAS CITY	JACKSON	MO 828
1011 BELTON COMM FACILITY ANNEX	AF KANSAS CITY	JACKSON	MO 828
1011 KANSAS CITY RECRUITING FAM HSG SITE	AF KANSAS CITY	JACKSON	MO 828
1011 RICHARDS GEBAUR AIR FORCE BASE	AF KANSAS CITY	JACKSON	MO 828

TABLE 4

DOD INSTALLATIONS BY REGION

REGION - 11

ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
1102 LA JUNTA RADAR BOMB SCORING SITE	AF	OTERO	CO AC-2
1102 LAMAR COMMUNICATIONS FACILITY ANNEX	AF	PROMERS	CO AC-2
1102 LAMAR FAMILY HOUSING ANX	AF	PROMERS	CO AC-2
1102 CARSON FORT	A	EL PASO	CO AC-1
1102 NORAD COMBAT OPERATIONS CENTER	AF	EL PASO	CO AC-1
1102 PETERSON AIR FORCE BASE	AF	EL PASO	CO AC-1
1102 PETERSON FAMILY HOUSING ANX	AF	EL PASO	CO AC-1
1102 US AIR FORCE ACADEMY	AF	EL PASO	CO AC-1
1102 PUEBLO ARMY DEPOT	A	PUEBLO	CO AC-1
1103 AIR FORCE PLANT NO 13	AF	SEDGWICK	KS
1103 MCCONNELL AIR FORCE BASE	AF	SEDGWICK	KS
1103 VANCE AIR FORCE BASE	AF	GARFIELD	OK AO-2
1103 KEGELMAN AIR FORCE AUXILIARY FIELD	AF	ALFALFA	OK AO-2
1104 KANSAS AAP	A	LABETTE	KS
1104 AIR FORCE PLANT NO 65	AF	NEWTON	MO AM-2
1104 GRUBER CAMP	A	MUSKOGEE	OK AO-3
1104 FORT SMITH MUNICIPAL AIRPORT ANG	AF	SEBASTIAN	AR AA-3
1104 CHAFFEE FORT	A	SEBASTIAN/FRANKLI	AR AA-3
1104 LITTLE ROCK AIR FORCE BASE	AF	PULASKI	AR AA-3
1104 AIR FORCE PLANT NO 3	AF	TULSA	OK AO-3
1104 TULSA INTERNATIONAL AIRPORT	AF	TULSA	OK AO-3
1105 AMMUNITION DEPOT MCALESTER	N	PITTSBURG	OK AO-4
1105 OKLAHOMA CITY AIR FORCE STATION	AF	OKLAHOMA	OK AO-4
1105 OKLAHOMA CITY RECRUITING FAM HSG SITE	AF	OKLAHOMA	OK AO-4
1105 TINKER AIR FORCE BASE	AF	OKLAHOMA	OK AO-4
1105 WILL ROGERS WORLD AIRPORT	AF	HARMON	OK AO-5
1106 ALTUS TRAINING ANNEX	AF	JACKSON	OK AO-5
1106 ALTUS COMM ANNEX RECEIVER	AF	TILLMAN	OK AO-5
1106 FREDERICK MUNICIPAL AIRPORT	AF	COMANCHE	OK AO-5
1106 SILL FORT	A	WICHITA	TX AT-1
1106 SHEPPARD AIR FORCE BASE	AF	WICHITA	TX AT-1
1107 LONGHORN AAP	A	HARRISON	TX AT-1
1107 HARKSDALE AIR FORCE BASE	AF	BOSSIER	LA AL-1
1107 LOUISIANA AAP	A	WERSTER/BOSSIER	LA AL-1
1107 LONE STAR ARMY AMMUNITION PLT	A	TEXARKANA-TEXARKANA	TX AT-1
1107 RED RIVER AR DEPOT	A	TEXARKANA-TEXARKANA	TX AT-1

TABLE 4

DOD INSTALLATIONS BY REGION

REGION - 12

ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
1201 COMMERCE RACHELOR HSG SITE	AF	HUNT	TX A16 A17 82
1201 GREENVILLE FAMILY HOUSING ANNEX	AF	HUNT	TX A16 A17 82
1201 NEDERLAND ANG STATION	AF	JEFFERSON	TX A15 A16 A17 81
1202 DALLAS FT WORTH FAMILY HOUSING SITE	AF	DALLAS	TX A16 A17 82 83
1202 GARLAND ANG STATION	AF	DALLAS	TX A16 A17 82 83
1202 US NAVAL AIR STATION DALLAS	AF	DALLAS	TX A16 A17 82 83
1202 NAVAL AIR STATION DALLAS	N	DALLAS	TX A16 A17 82 83
1202 SAGINAW ARMY AIRCRAFT PLANT	A	TARRANT	TX A16 A17 82 83
1202 AIR FORCE PLANT NO 4	AF	TARRANT	TX A16 A17 82 83
1202 CARSWELL AIR FORCE BASE	AF	TARRANT	TX A16 A17 82 83
1202 DALLAS RECRUITING FAM HSG SITE	AF	TARRANT	TX A16 A17 82 83
1202 ELLINGTON AIR FORCE BASE	AF	HARRIS	TX A15 A16 A17 84
1202 HOUSTON ADM ANX	AF	HARRIS	TX A15 A16 A17 84
1202 HOUSTON FAMILY HOUSING ANX	AF	HARRIS	TX A15 A16 A17 84
1202 HOUSTON RECRUITING FAM HSG SITE	AF	HARRIS	TX A15 A16 A17 84
1202 LA PORTE ANG STATION	AF	HARRIS	TX A15 A16 A17 84
1203 CANNON AIR FORCE BASE	AF	CURRY	NM A20
1203 MELROSE AIR FORCE RANGE	AF	ROOSEVELT	NM A20
1203 REESE AIR FORCE BASE	AF	LUBBOCK	TX A16 A17 A18
1203 DYESS AIR FORCE BASE	AF	LUBBOCK	TX A16 A17 A18
1203 WOLTERS FORT	A	TAYLOR	TX A16 A17 A18
1203 MOOD FORT	AF	PARKER/PALO PINTO	TX A16 A17 A18
1204 WEBB AIR FORCE BASE	AF	BELL/CORYELL	TX A13 A16 A17 A18
1204 REESE AF AUXILIARY FIELD	AF	HOWARD	TX A16 A17 A18
1204 NG CAMP SWIFT	A	TERRY	TX A16 A17 A18
1204 COLORADO CITY AIR FORCE AUXILIARY FIELD	AF	RASTROP	TX A16 A17 A18
1204 BERGSTROM AIR FORCE BASE	AF	MITCHELL	TX A13 A16 A17
1204 GOODFELLOW AIR FORCE BASE	AF	TRAVIS	TX A16 A17 89
1205 NAVAL AIR STATION CHASE FIELD	AF	TOM GREEN	TX A16 A17
1205 NAVAL AIR STA ALF GOLIAD	N	REE	TX A16 A17
1205 HOUSTON FORT SAM	N	GOLIAD	TX A16 A17
1205 STANLEY CAMP STOR ACTV	A	BEXAR	TX A16 A17 89
1205 BROOKS AIR FORCE BASE	AF	BEXAR	TX A16 A17 89
1205 BROOKS HOMES FAMILY HOUSING ANNEX	AF	BEXAR	TX A16 A17 89
1205 KELLY AIR FORCE BASE	AF	BEXAR	TX A16 A17 89
1205 LACKLAND AIR FORCE BASE	AF	BEXAR	TX A16 A17 89
1205 RANDOLPH AIR FORCE BASE	AF	BEXAR	TX A16 A17 89
1205 SAN ANTONIO AIR FORCE STATION	A	BEXAR	TX A16 A17 89
1205 HULLIS CAMP	A	BEXAR/COMAL	TX A16 A17 89
1205 SEGUIN AIR FORCE AUXILIARY FIELD	AF	GUADALUPE	TX A16 A17
1205 NAVAL AIR STA ALF ORANGE	N	JIM WELLS	TX A16 A17
1205 NAVAL AIR STATION KINGSVILLE	N	KLEBERG	TX A16 A17
1205 CASTROVILLE MUNICIPAL AIRPORT	AF	MEDINA	TX A16 A17 88
1205 HONDO MUNICIPAL AIRPORT	AF	MEDINA	TX A16 A17 88
1205 NAVAL AIR STA ALF CABANISS NUECES	N	NUECES	TX A15 A16 A17 811
1205 NAVAL AIR STATION ALF WALDRON	N	NUECES	TX A15 A16 A17 811

TABLE 4

DOD INSTALLATIONS BY REGION

REGION - 12

ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
1205 NAVAL AIR STATION CORPUS CHRISTI	N CORPUS CHRISTI	NUECES	TX A15 A16 A17 B11
1205 NAVAL AIR STATION PERRY PLACE	N CORPUS CHRISTI	NUECES	TX A15 A16 A17 B11
1205 REGIONAL MEDICAL CENTER CORPUS CHRISTI	N CORPUS CHRISTI	NUECES	TX A15 A16 A17 B11

TABLE 4

DOD INSTALLATIONS BY REGION

REGION - 13

ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
1302 BLISS FORT AAA RANGES	A	SOCORRO/OTERO	NM AN-1 AN-3 AN-5
1302 AIR FORCE PLANT NO 83	AF ALBUQUERQUE	BERNALILLO	NM AN-1 AN-2
1302 KIRTLAND AIR FORCE BASE	AF ALBUQUERQUE	BERNALILLO	NM AN-1 AN-2
1302 BLISS FORT	A EL PASO	EL PASO	TX AT-1 AT-4 AT-5 AT-6
1302 WHITE SANDS MSL RG	A	LINC/OTERO/SIER	NM AN-1 AN-5
1302 CLOUDCROFT SATELLITE TRACKING ANNEX	AF	OTERO	NM AN-1 AN-5
1302 HOLLOWMAN AIR FORCE BASE	AF	OTERO	NM AN-1 AN-5
1302 SACRAMENTO PEAK UPPER AIR RSCH SITE	AF	OTERO	NM AN-1 AN-5
1304 ROSWELL FAMILY HOUSING SITE	AF	CHAVES	NM AN-1 AN-2 AN-5
1305 EAGLE PASS AUXILIARY FIELD	AF	MAVERICK	TX AT-4 AT-5
1305 LAUGHLIN AIR FORCE BASE	AF	VAL VERDE	TX AT-4 AT-5

TABLE 4				
DOD INSTALLATIONS BY REGION				
REGION - 14				
ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS	
1402 GREEN RIVER TEST COMPLEX	A	GRAND	UT A3	

TABLE 4
 000 INSTALLATIONS BY REGION
 REGION - 15

ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
1501 HUACHUCA FT WILLCOX AREA	A	GRAHAM/NAVAJO	AZ A0-1 A0-2 A1-2 A3-2
1501 HOLBROOK RADAR BOMB SCORING SITE	AF	NAVAJO	AZ A0-1 A0-2 A1-2
1501 WINGATE FT DEP ACTIVITY	AF	MC KINLEY	NM A0-1 A0-2 A1-1
1502 NAVAJO DEPOT ACTIVITY	A	COCONINO	AZ A0-1 A0-2 A2-1
1502 NELLIS AIR FORCE RANGE	AF	LINCOLN	NV A0-1 A0-2 B2-3
1502 LAKE MEAD BASE	A	CLARK	NV A0-1 A0-2 A2-4
1502 INDIAN SPRINGS AF AUXILIARY FIELD	AF LAS VEGAS	CLARK	NV A0-1 A0-2 A2-4
1502 NELLIS AIR FORCE BASE	AF LAS VEGAS	CLARK	NV A0-1 A0-2 A2-4
1502 YUMA PROVING GROUND	A	YUMA	AZ A0-1 A0-2 A2-5
1502 MARCURPS AIR STATION YUMA	N	YUMA	AZ A0-1 A0-2 A2-5
1503 SILVER CITY RADAR SITE	AF	GRANT	NM A0-1 A0-2 A3-1
1503 HUACHUCA FORT	A	COCHISE	AZ A0-1 A0-2 A3-3
1503 NG FLORENCE	A	PINAL	AZ A0-1 A0-2 A3-6
1503 COOLIDGE FLORENCE MUNICIPAL AIRPORT	A	PINAL	AZ A0-1 A0-2 A3-6
1503 RITTENHOUSE AIR FORCE AUXILIARY FIELD	AF	PINAL	AZ A0-1 A0-2 A3-6
1503 AIR FORCE PLANT NO. 44	AF	PINAL	AZ A0-1 A0-2 A3-6
1503 DAVIS MONTHAN AIR FORCE BASE	AF TUCSON	PIMA	AZ A0-1 A0-2 A3-6
1503 SANUARITA AIR FORCE RANGE	AF TUCSON	PIMA	AZ A0-1 A0-2 A3-6
1503 TUCSON INTERNATIONAL AIRPORT	AF TUCSON	PIMA	AZ A0-1 A0-2 A3-6
1503 GILA REND AIR FORCE AUX FIELD	AF PHOENIX	MARICOPA	AZ A0-1 A0-2 A3-4
1503 LUKE AIR FORCE AUX FIELD 01	AF PHOENIX	MARICOPA	AZ A0-1 A0-2 A3-4
1503 LUKE AIR FORCE BASE	AF PHOENIX	MARICOPA	AZ A0-1 A0-2 A3-4
1503 SKY HARBOR INTERNATIONAL AIRPORT	AF PHOENIX	MARICOPA	AZ A0-1 A0-2 A3-4
1503 WILLIAMS AIR FORCE BASE	AF PHOENIX	MARICOPA	AZ A0-1 A0-2 A3-4
1503 ELECTRONICS LAB ARIZONA FACILITY	N PHOENIX	MARICOPA	AZ A0-1 A0-2 A3-4
1503 HUACHUCA FT GILA BEND AREA	A PHOENIX	MARICOPA/YUMA	AZ A0-1 A0-2 A3-4

TABLE 4

DOD INSTALLATIONS BY REGION

REGION - 16

ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
1601 AIR FORCE PLANT NO 78	AF	BOX ELDER	UT A1
1601 AIR FORCE PLANT NO 77	AF	DAVIS	UT A2
1601 FRANCIS PEAK ANG STATION	AF	DAVIS	UT A2
1601 HILL AIR FORCE BASE	AF	DAVIS	UT A2
1601 SALT LAKE CITY INTERNATIONAL AIRPORT	AF	SALT LAKE	UT A3
1601 DUGWAY PROVING GROUND	A	TOOELE	UT A3
1601 TOOELE ARMY DEPOT	A	TOOELE	UT A3
1601 TOOELE ARMY DEPOT SOUTH AREA	A	TOOELE	UT A3
1601 HILL AIR FORCE RANGE	AF	TOOELE	UT A3
1601 WENDOVER AIR FORCE RANGE	AF	TOOELE	UT A3
1601 DEFENSE DEPOT OGDEN	AF	TOOELE	UT A2
1601 NG CAMP WILLIAMS	A	WEBER	UT A2
1604 AIR STATION FALLON	N	SALT LAKE/UTAH	UT A3
1604 AIR STATION TARGET 17	N	CHURCHILL	NV A9
1604 AIR STATION TARGET 19	N	CHURCHILL	NV A9
1604 AIR STATION TARGET 21	N	CHURCHILL	NV A9
1604 AIR STATION TARGET R16	N	CHURCHILL	NV A9
1604 HANFTHORNE RADAR BOMB SCORING SITE	AF	CHURCHILL	NV A9
1604 AMMUNITION DEPOT HANFTHORNE	N	MINERAL	NV A9
1604 RENO INTERNATIONAL AIRPORT	AF	WASHOE	NV A10

TABLE 4

DOD INSTALLATIONS BY REGION

REGION - 17

ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
1701 KALISPELL AIR FORCE STATION	AF	FLATHEAD	MT
1701 KALISPELL FAMILY HOUSING ANNEX	AF	FLATHEAD	MT
1701 FORT MISSOULA	A	MISSOULA	MT
1701 SHIP RESEARCH & DEVT CTR RONNER	N	KOOTENAI	ID
1701 FAIRCHILD AIR FORCE R-SE	AF SPOKANE	SPOKANE	WA
1701 FAIRCHILD AIRMAN HOUSING ANNEX	AF SPOKANE	SPOKANE	WA
1701 FAIRCHILD FAMILY HOUSING ANNEX	AF SPOKANE	SPOKANE	WA
1701 FOUR LAKES COMMUNICATIONS STATION	AF SPOKANE	SPOKANE	WA
1701 MICA PEAK AIR FORCE STATION	AF SPOKANE	SPOKANE	WA
1701 SPOKANE FAMILY HOUSING ANNEX	AF SPOKANE	SPOKANE	WA
1701 SPOKANE INTERNATIONAL AIRPORT	AF SPOKANE	SPOKANE	WA
1701 SPOKANE INTERNATIONAL APT ANG	AF SPOKANE	SPOKANE	WA
1702 YAKIMA FIRING CENTER	A YAKIMA	YAKIMA-KITITIAS	WA
1702 UMATILLA DEPOT ACTIVITY	A	UMATILLA/MOPROW	OR A4
1703 WILDER RADAR BOMB SCORING SITE	AF	CANYON	ID A3
1703 MOUNTAIN HOME AIR FORCE BASE	AF	FLMORE	ID A3
1703 Saylor Creek Air Force Range	AF	OMYHEE	ID A3
1703 ROISE AIR TERMINAL (GOWEN FIELD)	AF ROISE CITY	ADA	ID A3
1705 MOUNT HEBB AIR FORCE STATION	AF	YAMHILL	OR
1705 PORTLAND BACHELOR HSG SITE	AF PORTLAND	MULTNOMAH	OR A4
1705 PORTLAND INTERNATIONAL AIRPORT	AF PORTLAND	MULTNOMAH	OR A4
1705 VANCOUVER BARRACKS	A PORTLAND	CLARK	WA A4
1705 NAVAL FACILITY PACIFIC BEACH	N	GRAYS HARBOR	WA
1705 NORTH BEND AIR FORCE STATION	AF	COOS	OR A1
1705 NORTH COMMUNICATION FACILITY ANNEX	AF	COOS	OR A1
1705 NORTH REND COMMUNITY HOUSING ANNEX	AF	COOS	OR A1
1705 NAVAL FACILITY COOS HEAD	N	COOS	OR A1
1705 MOUNT HEBB FAMILY HOUSING ANNEX	AF	COOS	OR A1
1706 MAKAM AIR FORCE STATION	AF	TILLAMOOK	OR A1
1706 AIR STATION OLF COUPEVILLE	AF	CLALLAM	WA A2
1706 AIR STATION WHIDBEY IS	N	ISLAND	WA A2
1706 TORPEDO STATION KEYPORT	N	JEFFERSON	WA A2
1706 SEATTLE RECRUITING FAM HSG SITE	AF	JEFFERSON	WA A2
1706 AIR STA ALF KITSAP	AF	KITSAP	WA A2
1706 REGIONAL MED CTR BREMERTON	N	KITSAP	WA A2
1706 SHIPYARD BREMERTON	N	KITSAP	WA A2
1706 SUBMARINE BASE RANGOR	N	KITSAP	WA A2
1706 SUPPLY CENTER BREMERTON	N	KITSAP	WA A2
1706 BELLINGHAM MUNICIPAL AIRPORT ANG	AF	WHATCOM	WA A2
1706 BLAINE AIR FORCE STATION	AF	WHATCOM	WA A2
1706 BLAINE FAMILY HOUSING ANNEX	AF	WHATCOM	WA A2
1706 LAWTON FORT	A	KING	WA A2
1706 DES MOINES FAMILY HOUSING ANNEX	AF SEATTLE-EVERETT	KING	WA A2
1706 FEDERAL WAY FAMILY HOUSING ANX	AF SEATTLE-EVERETT	KING	WA A2
1706 MOUNTLAKE TERRACE FAMILY HOUSING SITE	AF SEATTLE-EVERETT	KING	WA A2
1706 RENTON FAMILY HOUSING ANX	AF SEATTLE-EVERETT	KING	WA A2

TABLE 4

DOD INSTALLATIONS BY REGION

REGION - 17

ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
1706 SEATTLE ADMIN ANNEX	AF SEATTLE-EVERETT	KING	WA A2
1706 SEATTLE AIR NATIONAL GUARD BASE	AF SEATTLE-EVERETT	KING	WA A2
1706 SEATTLE FAMILY HOUSING ANNEX	AF SEATTLE-EVERETT	KING	WA A2
1706 SUPPORT ACTIVITY SEATTLE	N SEATTLE-EVERETT	KING	WA A2
1706 PAINE FIELD ANG STATION	AF SEATTLE-EVERETT	SNOHOMISH	WA A2
1706 RADIO STATION JIM CREEK	N SEATTLE-EVERETT	SNOHOMISH	WA A2
1706 MCCORD AIR FORCE BASE	AF TACOMA	PIERCE	WA A2
1706 LEWIS FORT	A TACOMA	PIERCE/THURSTON	WA A2

TABLE 4
DOD INSTALLATIONS BY REGION
REGION - 18

ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
1801 KLAMATH AIR FORCE STATION	AF	DEL NORTE	CA
1801 NAVAL FACILITY CENTERVILLE BEACH	N	HUMBOLDT	CA
1801 POINT ARENA AIR FORCE STATION	AF	MENDOCINO	CA
1801 COMMUNICATION STATION STOCKTON	N	SISKIYOU	CA
1801 SUPPORT ACT WARE IS	N	SISKIYOU	CA
1801 KENO AIR FORCE STATION	AF	KLAMATH	OR
1801 KINGSLEY FAMILY HOUSING ANNEX	AF	KLAMATH	OR
1801 KINGSLEY FIELD	AF	KLAMATH	OR
1801 KINGSLEY FIRING RANGE ANNEX	AF	KLAMATH	OR
1802 CHICO RESEARCH SITE	AF	BUTTE	CA A021
1802 MCCLELLAN ADMINISTRATIVE ANNEX	AF	BUTTE	CA A021
1802 STEREA ARMY DEPOT	A	LASSEN	CA
1802 BEALE AIR FORCE BASE	AF	YUBA	CA A021
1802 LINCOLN COMMUNICATIONS ANNEX	AF	PLACER	CA A021
1802 SACRAMENTO ARMY DEP	A	SACRAMENTO	CA A021
1802 WATHER AIR FORCE BASE	AF	SACRAMENTO	CA A021
1802 MCCLELLAN AIR FORCE BASE	AF	SACRAMENTO	CA A021
1802 MCCLELLAN FAMILY HOUSING ANNEX	AF	SACRAMENTO	CA A021
1802 MCCLELLAN STORAGE ANNEX	AF	SACRAMENTO	CA A021
1802 NORTH HIGHLANDS AIR NATIONAL GUARD	AF	SACRAMENTO	CA A021
1803 AIR STATION LEMOORE SEQUOIA NATL FOREST	N	KINGS	CA A031
1803 EDWARDS AIR FORCE BASE	AF	KERN	CA
1803 WEAPONS CENTER CHINA LAKE	AF	KERN	CA
1803 FRESNO ANG BASE	AF	FRESNO	CA A031
1803 CASTLE AIR FORCE BASE	AF	MERCED	CA A031
1803 CASTLE FAMILY HOUSING ANNEX NO 3	AF	MERCED	CA A031
1803 CASTLE HOUSING ANNEX NO 2	AF	MERCED	CA A031
1803 NAVAL AIR STATION ALF CROWS LANDING	AF	STANISLAUS	CA A031
1803 RIVERBANK AAP	A	STANISLAUS	CA A031
1803 DEFENSE DEPOT TRACY	A	SAN JOAQUIN	CA
1803 SHARPE ARMY DEPOT	A	SAN JOAQUIN	CA
1804 OAKLAND ARMY BASE	A	ALAMEDA	CA 8042
1804 CAMP PARKS COMMUNICATIONS ANNEX	AF	ALAMEDA	CA 8042
1804 FREMONT FAMILY HOUSING SITE	AF	ALAMEDA	CA 8042
1804 HAYWARD MUNICIPAL AIRPORT ANG	AF	ALAMEDA	CA 8042
1804 AIR STATION ALAMEDA	N	ALAMEDA	CA 8042
1804 REGIONAL MEDICAL CENTER OAKLAND	N	ALAMEDA	CA 8042
1804 SUPPLY CENTER OAKLAND	N	ALAMEDA	CA 8042
1804 PARKS CAMP	A	ALAMEDA/CONTRA CO	CA 8042
1804 WEAPONS STATION CONCORD	N	ALAMEDA/CONTRA CO	CA 8042
1804 WEAPONS STATION PITTSBURG	N	CONTRA COSTA	CA 8042
1804 BAKER FORT EAST	N	CONTRA COSTA	CA 8042
1804 MILL VALLEY AIR FORCE STATION	AF	MARIN	CA 8042
1804 SAN FRANCISCO PRESIDIO OF	AF	MARIN	CA 8042
1804 PUBLIC WORKS CENTER SAN FRANCISCO	N	SAN FRANCISCO	CA 8042
1804 SUPPORT ACTIVITY TREASURE IS	N	SAN FRANCISCO	CA 8042

TABLE 4

DOD INSTALLATIONS BY REGION

REGION - 18

ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
1804 PILLAR POINT MISSILE TRACKING SITE NO 1	AF SAN FRANCISCO-OAKLAND	SAN MATEO	CA 8042
1804 ALMADEN AIR FORCE STATION	AF SAN JOSE	SANTA CLARA	CA
1804 ALMADEN COMMUNICATIONS FACILITY ANNEX	AF SAN JOSE	SANTA CLARA	CA
1804 ALMADEN FAMILY HOUSING ANNEX	AF SAN JOSE	SANTA CLARA	CA
1804 SUNNYVALE AIR FORCE STATION	AF SAN JOSE	SANTA CLARA	CA 8041
1804 SUNNYVALE FAMILY HOUSING SITE	AF SAN JOSE	SANTA CLARA	CA 8041
1804 AIR STATION MOFFETT FIELD	N SAN JOSE	SANTA CLARA	CA 8041
1804 HF RAD SANTA ROSA	A SANTA ROSA	SONOMA	CA 8051
1804 SECURITY GROUP ACTIVITY SONOMA	A SANTA ROSA	SONOMA	CA 8042
1804 RIO VISTA STORAGE AREA FACILITY	A VALLEJO-FAIRFIELD-NAPA	SOLANO	CA 8023
1804 TRAVIS AIR FORCE BASE	AF VALLEJO-FAIRFIELD-NAPA	SOLANO	CA 8042
1804 SHIPYARD WARE IS	N VALLEJO-FAIRFIELD-NAPA	SOLANO	CA 8042
1805 ROBERTS CAMP ANNEX	A	SAN LUIS OBISPO	CA 8051
1805 CAMBRIA AIR FORCE STATION	AF	SAN LUIS OBISPO	CA
1805 CAMBRIA FAMILY HOUSING ANNEX	AF	SAN LUIS OBISPO	CA
1805 SUPPLY CENTER ESTERO BAY BRANCH	N	SAN LUIS OBISPO	CA
1805 HUNTER LIGGETT FORT	A	MONTEREY	CA 8051
1805 MONTEREY PRESIDIO OF	A	MONTEREY	CA 8051
1805 ORD FORT	A	MONTEREY	CA 8051
1805 NAVAL FACILITY BIG SUR	A	MONTEREY	CA 8051
1805 SCOL/POSTGRADUATE ANNEX	N	MONTEREY	CA 8051
1805 SCOL/POSTGRADUATE BEACH AREA	N	MONTEREY	CA 8051
1805 SCOL/POSTGRADUATE MONTEREY	N	MONTEREY	CA 8051
1805 NG CAMP ROBERTS	A	MONTEREY	CA 8051
1805 BRANCH USDR LOMPOC	A	MONTEREY/SAN LUIS	CA
1805 VANDENBERG AIR FORCE BASE	AF SANTA BARBARA-SANTA MARIA-LOMPOC	SANTA BARBARA	CA
1805 MSLE TEST CTR SAN MIGUEL IS	N SANTA BARBARA-SANTA MARIA-LOMPOC	SANTA BARBARA	CA
1805 MSLE TEST CTR SANTA CRUZ IS	N SANTA BARBARA-SANTA MARIA-LOMPOC	SANTA BARBARA	CA
1806 MARCORPS AIR STATION EL TOPO	N ANAHEIM-SANTA ANA-GARDEN GROVE	ORANGE	CA 8061
1806 MARCORPS AIR STATION/H/SANTA ANA	N ANAHEIM-SANTA ANA-GARDEN GROVE	ORANGE	CA 8061
1806 NAVAL AIR STA ALF SAN CLEMENTE	N ANAHEIM-SANTA ANA-GARDEN GROVE	ORANGE	CA 8061
1806 RESERVE CTR LOS ALAMITOS	N ANAHEIM-SANTA ANA-GARDEN GROVE	ORANGE	CA 8061
1806 WEAPONS STATION SEAL BEACH	N ANAHEIM-SANTA ANA-GARDEN GROVE	ORANGE	CA 8062
1806 LAMDALE ARMY MISSILE PLANT	A LOS ANGELES-LONG BEACH	LOS ANGELES	CA 8062
1806 MACARTHUR FORT	A LOS ANGELES-LONG BEACH	LOS ANGELES	CA 8062
1806 CARSON FAMILY HOUSING SITE	AF LOS ANGELES-LONG BEACH	LOS ANGELES	CA 8062
1806 COMPTON ANG STATION	AF LOS ANGELES-LONG BEACH	LOS ANGELES	CA 8062
1806 LOS ANGELES AFROTT FAMILY HOUSING SITE	AF LOS ANGELES-LONG BEACH	LOS ANGELES	CA 8062
1806 LOS ANGELES AIR FORCE ANNEX NR 1	AF LOS ANGELES-LONG BEACH	LOS ANGELES	CA 8062
1806 LOS ANGELES AIR FORCE STATION	AF LOS ANGELES-LONG BEACH	LOS ANGELES	CA 8062
1806 LOS ANGELES BACHELOR HSG SITE	AF LOS ANGELES-LONG BEACH	LOS ANGELES	CA 8062
1806 LOS ANGELES RECRUITING FAM HSG SITE	AF LOS ANGELES-LONG BEACH	LOS ANGELES	CA 8062
1806 PRODUCTION FLIGHT TEST INSTL AF PLY 42	AF LOS ANGELES-LONG BEACH	LOS ANGELES	CA 8062
1806 SAN PEDRO HILL AIR FORCE STATION	AF LOS ANGELES-LONG BEACH	LOS ANGELES	CA 8062
1806 SAN PEDRO HILL FAMILY HOUSING ANNEX	AF LOS ANGELES-LONG BEACH	LOS ANGELES	CA 8062
1806 SEPULVEDA AIR NATIONAL GUARD STATION	AF LOS ANGELES-LONG BEACH	LOS ANGELES	CA 8062

DOD INSTALLATIONS BY REGION

REGION - 18

ASR INSTALLATION

CM SMSA	COUNTY	ST PROBLEMS
1806 VAN NUYS AIRPORT ANG	LOS ANGELES	CA 8062
1802 VAL NUYS FAMILY HOUSING SITE	LOS ANGELES	CA 8062
1804 AMPHIBIOUS BASE SAN CLEMENTE IS	LOS ANGELES	CA
1806 OCEANS SYSTEMS CENTER SAN CLEMENTE IS	LOS ANGELES	CA
1806 REGIONAL MEDICAL CENTER LONG BEACH	LOS ANGELES	CA 8062
1804 SAN PEDRO FUEL FARM	LOS ANGELES	CA 8062
1806 SHIPYARD LONG BEACH	LOS ANGELES	CA 8062
1806 SUPPLY CENTER LONG BEACH ANNEX	LOS ANGELES	CA 8062
1806 CONSTRUCTION BATTALN CTR	LOS ANGELES	CA 8062
1806 MSLE TEST CTR LAGUNA PEAK	LOS ANGELES	CA 8062
1806 MSLE TEST CTR PRINCE IS	LOS ANGELES	CA 8062
1806 MSLE TEST CTR SAN NICHOLAS IS	LOS ANGELES	CA 8062
1806 MSLE TEST CTR SANTA BARBARA IS	LOS ANGELES	CA 8062
1806 PACIFIC MISSILE TEST CENTER	LOS ANGELES	CA 8062
1806 CUDDEBACK DRY LAKE TEST ANNEX	LOS ANGELES	CA 8062
1806 ONTARIO INTERNATIONAL AIRPORT ANG	LOS ANGELES	CA 8062
1806 MARCH AIR FORCE BASE	LOS ANGELES	CA 8062
1806 MARCH COMMUNICATIONS ANNEX NO 2	LOS ANGELES	CA 8062
1806 MARCH COMMUNICATIONS FACILITY ANNEX	LOS ANGELES	CA 8062
1806 IRWIN FORT	LOS ANGELES	CA 8062
1806 IRWIN FORT ANNEX	LOS ANGELES	CA 8062
1806 GEORGE AIR FORCE BASE	LOS ANGELES	CA 8062
1806 NORTON AIR FORCE BASE	LOS ANGELES	CA 8062
1806 NORTON COMMUNICATIONS FACILITY ANNEX	LOS ANGELES	CA 8062
1806 MARCORPS BASE TWENTYNINE PALMS	LOS ANGELES	CA 8062
1806 MARCORPS LOGSTS SUP BASE HARSTON	LOS ANGELES	CA 8062
1806 AIR FORCE PLANT NO 19	LOS ANGELES	CA 8062
1806 MT LAGUNA AIR FORCE STATION	LOS ANGELES	CA 8062
1806 MT LAGUNA FAMILY HOUSING ANNEX	LOS ANGELES	CA 8062
1806 AMPHIBIOUS BASE CORONADO	LOS ANGELES	CA 8062
1806 AMPHIBIOUS BASE CUYAMACA MTS	LOS ANGELES	CA 8062
1806 COMMUNICATION STATION SAN DIEGO	LOS ANGELES	CA 8062
1806 ELECTRONIC LAB BORDER FIELD	LOS ANGELES	CA 8062
1806 ELECTRONIC SYS FNG CTR SAN DIEGO	LOS ANGELES	CA 8062
1806 FLT ANTI-SUB WARF TRN CTR SAN DIEGO	LOS ANGELES	CA 8062
1806 FLT CUMBAT TNG CENTER SAN DIEGO	LOS ANGELES	CA 8062
1806 MARCORPS BASE CAMP PENDLETON	LOS ANGELES	CA 8062
1806 MARCORPS RECRUIT DEPOT SAN DIEGO	LOS ANGELES	CA 8062
1806 NAVAL AIR STA CAMP WARNER SPRINGS	LOS ANGELES	CA 8062
1806 NAVAL AIR STA OLF IMPERIAL BEACH	LOS ANGELES	CA 8062
1806 NAVAL AIR STA SYCAMORE CANYON	LOS ANGELES	CA 8062
1806 NAVAL AIR STATION MIRAMAR	LOS ANGELES	CA 8062
1806 NAVAL AIR STATION NORTH ISLAND	LOS ANGELES	CA 8062
1806 NAVAL STATION SAN DIEGO	LOS ANGELES	CA 8062
1806 OCEAN SYSTEMS CENTER SAN DIEGO	LOS ANGELES	CA 8062

TABLE 4

DOD INSTALLATIONS BY REGION

REGION - 18

ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
1806 PUBLIC WORKS CTR SAN DIEGO	N SAN DIEGO	SAN DIEGO	CA R062 R063
1806 REG MED CENT CAMP PENDLETON	N SAN DIEGO	SAN DIEGO	CA R062 R063
1806 REGIONAL MEDICAL CENTER SAN DIEGO	N SAN DIEGO	SAN DIEGO	CA R062 R063
1806 SUBMARINE SUPPORT FAC SAN DIEGO	N SAN DIEGO	SAN DIEGO	CA R062 R063
1806 SUPPLY CENTER FT LOWA ANNEX	N SAN DIEGO	SAN DIEGO	CA R062 R063
1806 SUPPLY CENTER NATIONAL CITY ANNEX	N SAN DIEGO	SAN DIEGO	CA R062 R063
1806 SUPPLY CENTER SAN DIEGO	N SAN DIEGO	SAN DIEGO	CA R062 R063
1806 TRAINING CENTER SAN DIEGO	N SAN DIEGO	SAN DIEGO	CA R062 R063
1806 NAT PARACHUTE TEST RANGE	N	IMPERIAL	CA R062 R063
1807 COYOTE FLATS AIR STRIP	AF	INYO	CA R062 R064
1807 MARCORPS TRAINING CAMP BRIDGEPORT	N	MONO	CA

TABLE 4

DQO INSTALLATIONS BY REGION

REGION - 19

ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
1901 CAPE LISBURNE AIR FORCE STATION	AF	BARROW	AK A3
1901 POINT BARROW DEM STATION	AF	BARROW	AK A3
1901 KOTZEBUE AIR FORCE STATION	AF	KOSUK	AK 88
1901 TIN CITY AIR FORCE STATION	AF	NOME	AK 89
1901 OCEAN SYS CTR CAPE PRINCE OF WALES	N	NOME	AK 89
1901 BLACK RAPIDS TNG SITE	A	FAIRBANKS	AK A1
1901 CLEARWATER LAKE TNG SITE	A	FAIRBANKS	AK A1
1901 FAIRBANKS PERMAFROST STATION	A	FAIRBANKS	AK A1
1901 GERSTLE RIVER ARCTIC TEST	A	FAIRBANKS	AK A1
1901 GREELY FORT	A	FAIRBANKS	AK A1
1901 WAINWRIGHT FORT	A	FAIRBANKS	AK A1
1901 YUKON COMD TNG SITE	A	FAIRBANKS	AK A1
1901 BLAIR LAKE AIR FORCE RANGE	AF	FAIRBANKS	AK A1
1901 CLEAR MISSILE EARLY WARNING STATION	AF	FAIRBANKS	AK A1
1901 EIELSON AIR FORCE BASE	AF	FAIRBANKS	AK A1
1901 MURPHY DOME AIR FORCE STATION	AF	FAIRBANKS	AK A1
1901 TATALINA AIR FORCE STATION	AF	FAIRBANKS	AK A1
1901 BARTER ISLAND DEM STATION	AF	KUSKOMIM	AK B15
1901 FORT YUKON AIR FORCE STATION	AF	UPPER YUKON	AK A3
1901 CAPE ROMANZOF AIR FORCE STATION	AF	UPPER YUKON	AK B11
1901 GALENA AIRPORT	AF	MADE HAMPTON	AK B14
1901 INDIAN MOUNTAIN AIR FORCE STATION	AF	YUKON KOYUKUK	AK B12
1901 CAMPION AIR FORCE STATION	AF	YUKON KOYUKUK	AK B12
1901 KING SALMON AIRPORT	AF	YUKON-KOYUKUK	AK B12
1901 COLD HAY AIR FORCE STATION	AF	YUKON-KOYUKUK	AK B12
1901 SHEMA AIR FORCE BASE	AF	YUKON-KOYUKUK	AK B12
1901 COMMUNICATION STATION ADAK	N	YUKON-KOYUKUK	AK B12
1901 NAVAL STATION ADAK	N	YUKON-KOYUKUK	AK B12
1901 CAPE NEMENHAM AIR FORCE STATION	AF	YUKON-KOYUKUK	AK B12
1901 SPARREVOHN AIR FORCE STATION	AF	YUKON-KOYUKUK	AK B12
1901 GULKANA ARMY SITE	A	YUKON-KOYUKUK	AK B12
1901 EKLUTNA DISPERSAL SITE	A	YUKON-KOYUKUK	AK B12
1901 EKLUTNA MTN GLACIER SITE	A	YUKON-KOYUKUK	AK B12
1901 NG CAMP CARROLL	A	YUKON-KOYUKUK	AK B12
1901 NIKE ALASKA BAY	A	YUKON-KOYUKUK	AK B12
1901 RICHARDSON FORT	A	YUKON-KOYUKUK	AK B12
1901 ACHORAGE IAP ADMIN ANNEX	AF	YUKON-KOYUKUK	AK B12
1901 ELMENDORF AIR FORCE BASE	AF	YUKON-KOYUKUK	AK B12
1901 KULIS ANG BASE	AF	YUKON-KOYUKUK	AK B12

TABLE 4

DOD INSTALLATIONS BY REGION

REGION - 20

ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
2001 KILAUEA MIL RES	A	HAWAII	HI 81-2
2001 POMAKULOA TNG AREA	A	HAWAII	HI 81-2
2003 ALIAMANU MIL RES	A	HONOLULU	HI 86-3
2003 DE RUSSY FORT	A	HONOLULU	HI 86-3
2003 DILLINGHAM MIL RES	A	HONOLULU	HI 86-6
2003 HELEMANO RAD REC STA	A	HONOLULU	HI 86-6
2003 HONOLULULI MIL RES	A	HONOLULU	HI 86-3
2003 KAENA POINT MIL RES	A	HONOLULU	HI 86-5
2003 KAHUKU TNG AREA	A	HONOLULU	HI 86-3
2003 KAMEHAMEHA FORT	A	HONOLULU	HI 86-3
2003 KAPALAMA MIL RES	A	HONOLULU	HI 86-3
2003 KIPAPA AMMO STOR SITE	A	HONOLULU	HI 86-3
2003 MAKUA MIL RES	A	HONOLULU	HI 86-6
2003 RUGER FORT	A	HONOLULU	HI 86-6
2003 SCHUIFIELD BKS MIL RES	A	HONOLULU	HI 86-6
2003 SHAFER FORT	A	HONOLULU	HI 86-3
2003 TRIPLER ARMY MEDICAL CENTER	A	HONOLULU	HI 86-3
2003 WAIANAE KAI MIL RES	A	HONOLULU	HI 86-3
2003 WAIANA MILITARY RESERVATION	A	HONOLULU	HI 86-3
2003 WAIKAKALAU AMMO STOR TUNNELS	A	HONOLULU	HI 86-3
2003 BELLWIS AIR FORCE STATION	A	HONOLULU	HI 86-6
2003 HICKAM AIR FORCE BASE	A	HONOLULU	HI 86-6
2003 KAALA AIR FORCE STATION	AF	HONOLULU	HI 86-2
2003 KAENA POINT SATELLITE TRACKING STATION	AF	HONOLULU	HI 86-4
2003 KUNIA COMMUNICATION	AF	HONOLULU	HI 86-5
2003 PALEHUA AF SOLAR OBSERVATORY RSCH SITE	AF	HONOLULU	HI 86-5
2003 PUNAMANO AIR FORCE STATION	AF	HONOLULU	HI 86-3
2003 WAHIAWA COMMUNICATION STATION	AF	HONOLULU	HI 86-1
2003 WHEELER AIR FORCE BASE	AF	HONOLULU	HI 86-4
2003 COMM AREA MASTER STATION WAHIAWA	AF	HONOLULU	HI 86-4
2003 FLT OPS CNTRL CTR KUNIA	N	HONOLULU	HI 86-4
2003 MAGAZINE KOLE KOLE PASS	N	HONOLULU	HI 86-4
2003 MAGAZINE LOWER KIPAPA	N	HONOLULU	HI 86-5
2003 MAGAZINE LUUALAEI	N	HONOLULU	HI 86-5
2003 MAGAZINE WAIKELE	N	HONOLULU	HI 86-5
2003 MAGAZINE WAIPIIO PENINSULA	N	HONOLULU	HI 86-5
2003 MAGAZINE WEST LOCH	N	HONOLULU	HI 86-5
2003 MARCORPS AIR STATION KANEHOE BAY	N	HONOLULU	HI 86-5
2003 MARCORPS CAMP H M SMITH	N	HONOLULU	HI 86-5
2003 NAVAL AIR STA ALF FORD IS	N	HONOLULU	HI 86-2
2003 NAVAL AIR STA KAHOO LAWE IS	N	HONOLULU	HI 86-4
2003 NAVAL AIR STA KAULA ROCK	N	HONOLULU	HI 86-4
2003 NAVAL AIR STATION BARBERS POINT	N	HONOLULU	HI 86-4
2003 NAVAL STATION CAMP CATLIN	N	HONOLULU	HI 86-4
2003 NAVAL STATION FORD IS	N	HONOLULU	HI 86-4
2003 NAVAL STATION HOKULANI	N	HONOLULU	HI 86-4

B6-6

TABLE 4	ASR INSTALLATION	CM SMSA	COUNTY	ST PROBLEMS
DDD INSTALLATIONS BY REGION				
REGION - 20				
	2003 NAVAL STATION MAKALAPA	N	HONOLULU	HI 86-4
	2003 NAVAL STATION UHANA NM	N	HONOLULU	HI 86-4
	2003 NAVAL STATION PEARL CITY	N	HONOLULU	HI 86-4
	2003 NAVAL STATION PEARL HARBOR	N	HONOLULU	HI 86-4
	2003 PUBLIC WORKS CTR PEARL HARBOR	N	HONOLULU	HI 86-4
	2003 SHIPYARD PEARL HARBOR	N	HONOLULU	HI 86-5
	2003 SUBMARINE BASE PEARL HARBOR	N	HONOLULU	HI 86-4
	2003 SUPPLY CENTER HONOLULU	N	HONOLULU	HI 87-5
	2004 KOKEE AIR FORCE STATION	AF	KAUAI	HI 87-3
	2004 MAGAZINE PORT ALLEN	N	KAUAI	HI 87-5
	2004 MISSILE FACILITY BARKING SANDS	N	KAUAI	HI 87-3
	2004 MISSILE FACILITY PORT ALLEN	N	KAUAI	HI 87-3
	2004 MSLE FACILITY MAKAHIA RIDGE	N	KAUAI	HI 87-3

TABLE 5. ARMY INSTALLATIONS BY REGION

This table provides a list of the Army installations from Table 1, grouping them by water resource region and by aggregated subregion. Data shown in the columns are described below.

ASR -- Aggregated Subregion in which the installation is located.

COUNTY -- Name of the county in which the installation is located.

ST -- State in which the installation is located.

PROBLEMS -- Specifically identified water and land-related resource problems for the area in which the installation is located. The alpha prefix identifies the category of problem (A--a severe problem identified but not yet under study, and B--a severe problem already under study). An abbreviated description of the problem may be found in Appendix B by noting the region and problem numbers for the installation in this table. Example: Edwards Camp in Region 1 with Problem Number B11. Turning to Appendix B, find Region 1 and Problem Number B11. (In Appendix B, Category A problems are listed first in numerical order, followed by Category B problems in numerical order.) Where a second alpha indicator appears, it is the first letter in the state where the installation is located. All problem numbers are the same as those found in the Second National Water Assessment in order to facilitate reference to them.

75 85 00 75 85 00 -- These are projections for the years 1975, 1985, and 2000. The first set is for an average year and the second set is for a dry year (see text for definitions of average year and dry year). The projections are a ratio of requirements/supply for the entire ASR in which the installation is located. The projections should only be used as indicators of a general condition and not as specific indicators of available water in the vicinity of the installation. Each projection was derived by the Water Resources Council by taking the projected water requirements for one year in the ASR and dividing them by the projected water supply available for one year in the ASR.

TABLE 5
ARMY INSTALLATIONS BY REGION
REGION - 1

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
103	EDWARDS CAMP	BARNSTABLE	MA	B11	88	89	90	105	106	108
103	US ARMY MAT & MECH RESRCH CEN	MIDDLESEX	MA	B11	88	89	90	105	106	108
103	USA NATICK DEV CEN	MIDDLESEX	MA	A10	88	89	90	105	106	108
103	USA NATICK DEV CEN ANX	MIDDLESEX	MA	A10	88	89	90	105	106	108
103	DEVENS FORT	MIDDLESEX-WORCESTER	MA	A10	88	89	90	105	106	108
103	SOUTH BOSTON SUPPORT ACT	SUFFOLK	MA	B11	88	89	90	105	106	108
105	COLD REGIONS RE LAB	GRAFTON	NH	B16	89	90	92	112	113	114
106	DARCOM FIRING RANGE UNDERHILL	CHITTENDEN	VT	A20	88	88	88	113	113	114
106	NG ETHAN ALLEN AFB	CHITTENDEN	VT	A20	88	88	88	113	113	114

TABLE 5
ARMY INSTALLATIONS BY REGION
REGION - 2

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
201	WATERVLIET ARSENAL	ALBANY	NY	B2	90	90	91	119	120	121
201	STEWART ANNEX	ORANGE	NY	B3	90	90	91	119	120	121
201	WEST POINT MIL RES	ORANGE	NY	B3	90	90	91	119	120	121
202	MILITARY OCEAN TML BAYONNE	HUDSON	NJ	B6	90	91	92	120	121	123
202	HANCOCK FORT	MONMOUTH	NJ	B11	90	91	92	120	121	123
202	MONMOUTH FORT CHAS WOOD	MONMOUTH	NJ	B11	90	91	92	120	121	123
202	MONMOUTH FORT COLES	MONMOUTH	NJ	B11	90	91	92	120	121	123
202	MONMOUTH FORT EVANS	MONMOUTH	NJ	B11	90	91	92	120	121	123
202	MONMOUTH FORT HQ ECOM	MONMOUTH	NJ	B11	90	91	92	120	121	123
202	MONMOUTH FORT OAKHURST	MONMOUTH	NJ	B11	90	91	92	120	121	123
202	PICATINNY ARS	MORRIS	NJ	B11	90	91	92	120	121	123
202	HAMILTON FORT	KINGS	NJ	B6	90	91	92	120	121	123
202	MANHATTAN BEACH HSG	KINGS	NY	B6	90	91	92	120	121	123
202	MILITARY OCEAN TML BROOKLYN	KINGS	NY	B6	90	91	92	120	121	123
202	TILDEN FORT	QUEENS	NY	B6	90	91	92	120	121	123
202	TOTTEN FORT	QUEENS	NY	B6	90	91	92	120	121	123
202	WADSWORTH FORT	RICHMOND	NY	B6	90	91	92	120	121	123
203	NG NEW CASTLE	NEW CASTLE	DE	B10	89	90	91	113	114	116
203	DIX FORT	HURLINGTON/OCEAN	NJ	B12	89	90	91	113	114	116
203	PEDRICKTOWN SUPPORT FACIL	SALEM	NJ	B10	89	90	91	113	114	116
203	TOBYHANNA ARMY DEPOT	MONROE	PA	B8	89	90	91	113	114	116
203	DEF PERS SUPPORT CTR	PHILADELPHIA	PA	B10	89	90	91	113	114	116
203	FRANKFORD ARS	PHILADELPHIA	PA	B10	89	90	91	113	114	116
203	TACONY WAREHOUSE PENN	PHILADELPHIA	PA	B10	89	90	91	113	114	116
204	CARLISLE BARRACKS	CUMBERLAND	PA	B10	89	90	91	113	114	116
204	SCRANTON ARMY AMMUNITION PLANT	CUMBERLAND	PA	B17	87	87	88	107	108	109
204	INDIAN TOWN GAP FORT	LACKAWANNA	PA	B16	87	87	88	107	108	109
204	NEW CUMBERLAND ARMY DEPOT	LEBANON/DAUPHIN	PA	B14	87	87	88	107	108	109
205	FIRST ARMY RECREATION AREA	YORK	PA	B17	87	87	88	107	108	109
205	MEADE FORT GEORGE G	SUSSEX	DE	B19	85	86	87	111	113	115
205	ABERDEEN PROVING GROUND	ANNE ARUNDEL	MD	B18	85	86	87	111	113	115
205	ABERDEEN PROVING GROUND EDGEMOOD	HARFORD	MD	B17	85	86	87	111	113	115
205	FORT AP HILL VA	HARFORD/SALTMORE	MD	B17	85	86	87	111	113	115
205	DEF GEN SUPPLY CENTER	CAROLINE/ESSEX	VA	B24	85	86	87	111	113	115
205	MONROE FORT	CHESTERFIELD	VA	B26	85	86	87	111	113	115
205	EUSTIS FORT	HAMPTON	VA	B27	85	86	87	111	113	115
205	FORT PICKETT	NEWPORT NEWS	VA	B27	85	86	87	111	113	115
205	FORT LEE VA	NOTTO/BRUNS/DINW/LUN	VA	B26	85	86	87	111	113	115
205	STORY FORT	PRINCE GEORGE	VA	B26	85	86	87	111	113	115
206	MCNAIR FORT LESLEY J	VIRGINIA BEACH	VA	B27	85	86	87	111	113	115
206	REED WALTER AMC	DIST OF COL	DC	B22	84	85	87	113	114	117
206	HARRY DIAMOND TEST AREA	DIST OF COL	DC	B22	84	85	87	113	114	117
206	DETROICK FT	CHARLES	MD	B22	84	85	87	113	114	117
206	HARRY DIAMOND LABS	FREDERICK	MD	B22	84	85	87	113	114	117
206	DEFENSE MAPPING AGENCY	MONTGOMERY/PRINCE GEORG	MD	B22	84	85	87	113	114	117
206	REED WALTER AMC FOREST G	MONTGOMERY	MD	B22	84	85	87	113	114	117

TABLE 5
ARMY INSTALLATIONS BY REGION
REGION - 2

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
206	REED WALTER AMC GLENHAVEN	MONTGOMERY	MD	822	84	85	87	113	114	117
206	SUITLAND ANNEX	PRINCE GEORGES	MD	822	84	85	87	113	114	117
206	RITCHIE FT	WASHINGTON	MD	822	84	85	87	113	114	117
206	RITCHIE FT QUIRAUK STA A	WASHINGTON	MD	822	84	85	87	113	114	117
206	LETTERKENNY ARMY DEPUT	WASHINGTON	MD	822	84	85	87	113	114	117
206	CAMERON STATION	FRANKLIN	PA	822	84	85	87	113	114	117
206	ARLINGTON HALL STATION	ALEXANDRIA	VA	822	84	85	87	113	114	117
206	MYER FORT	ARLINGTON	VA	822	84	85	87	113	114	117
206	MYER FORT	ARLINGTON	VA	822	84	85	87	113	114	117
206	BEVOIR FORT	ARLINGTON	VA	822	84	85	87	113	114	117
206	VINT HILL FARMS STA	FAIRFAX	VA	822	84	85	87	113	114	117
206	HARRY DIAMOND LABS #DGRCE	PRINCE WILLIAM	VA	822	84	85	87	113	114	117

TABLE 5

ARMY INSTALLATIONS BY REGION

REGION - 3

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
301	TARHEEL ARMY MISSILE PLT	ALAMANCE	NC	A303	72	73	75	99	100	102
301	MILITARY OCEAN TML SUNNY POINT	BRUNSWICK	NC	A303	72	73	75	99	100	102
301	BRAGG FT RECR CEN 02	CUMBERLAND	NC	A303	72	73	75	99	100	102
301	BRAGG FT	CUMBERLAND/HOKE	NC	A303	72	73	75	99	100	102
301	NG BLUETHENTHAL FIELD	NEW HAMOVER	NC	A303	72	73	75	99	100	102
302	CHARLESTON ARMY DEPOT	CHARLESTON/BERKELEY	SC	A305R	81	82	84	115	117	120
302	JACKSON FORT	RICHLAND	SC	A305R	81	82	84	115	117	120
303	DAU TIENG STAGETFIELD 04	BRYAN	GA	A306	77	78	79	112	113	115
303	CU CHI STAGETFIELD 02	CHATHAM	GA	A306	77	78	79	112	113	115
303	HUNTER ARMY AIRFIELD	CHATHAM	GA	A306	77	78	79	112	113	115
303	GORDON FT	COLUM/JEFF/MCDUFF	GA	A306	77	78	79	112	113	115
303	GORDON FT RECP AREA	COLUMBIA	GA	A306	77	78	79	112	113	115
303	LOC NINH STAGETFIELD 03	EFFINGHAM	GA	A306	77	78	79	112	113	115
303	STEWART FORT	LIB/LNG/BRYN/EVN/TAT	GA	A306	77	78	79	112	113	115
303	GORDON FT OLIVER AREA	RICHMOND	GA	A306	77	78	79	112	113	115
303	MILITARY OCEAN TML KINGS RAY	CAMDEN	GA	A307	77	78	79	112	113	115
304	BLANDING CAMP	CLAY	FL	A308	83	84	86	143	146	149
306	ALLEN FIELD	HOUSTON	AL	A313	87	88	89	114	115	117
306	TOTH FIELD	HOUSTON	AL	A312	87	88	89	114	115	117
306	BENNING FORT	RUSSELL	AL	A312	87	88	89	114	115	117
306	HENNING FORT	RUSSELL	AL	A312	87	88	89	114	115	117
306	GILLEN FORT	CHATTANOOCHEE/MUSCOG	GA	A312	87	88	89	114	115	117
306	MCPHERSON FT	CLAYTON	GA	A312	87	88	89	114	115	117
306	BENNING FORT TNG AREA	FULTON	GA	A312	87	88	89	114	115	117
307	RUNKLE ROBERT LESLIE TAC SITE	LUMPKIN	GA	A312	87	88	89	114	115	117
307	SHELL ARMY HELIPORT	COFFEE	AL	A314	89	90	91	113	113	115
307	SHELLY FIELD	COFFEE	AL	A314	89	90	91	113	113	115
307	HUCKER FORT	COFFEE/DALE	AL	A314	89	90	91	113	113	115
307	CAIRNS AAF	DALE	AL	A314	89	90	91	113	113	115
307	GOLDHERRG FIELD	DALE	AL	A314	89	90	91	113	113	115
307	HUNT FIELD	DALE	AL	A314	89	90	91	113	113	115
307	HIGH B'UFF	GENEVA	AL	A314	89	90	91	113	113	115
307	HIGH FALLS	GENEVA	AL	A314	89	90	91	113	113	115
307	TAC X	GENEVA	AL	A314	89	90	91	113	113	115
307	LOUISVILLE RM STAGETFIELD	PIKE	AL	A314	89	90	91	113	113	115
307	RENNING FORT MORENO POINT	OKALOOSA	FL	A314	89	90	91	113	113	115
307	ANNISTON ARMY DEPOT	CALHOUN	AL	A315	89	90	91	113	113	115
307	MCCLELLAN FORT	CALHOUN	AL	A315	89	90	91	113	113	115
307	ALABAMA AAP	TALLADEGA	AL	A315	89	90	91	113	113	115
307	COOSA RIV STORAGE ANNEX	TALLADEGA	AL	A315	89	90	91	113	113	115
307	MCPHERSON FT RECP AREA	BARTON	GA	A315	89	90	91	113	113	115
309	NG CAMP SHELBY	FORREST/PERRY	MS	A317	62	62	62	117	117	118

TABLE 5

ARMY INSTALLATIONS BY REGION

REGION - 4

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
401	NG CAMP LUCAS	CHIPPWA	MI	A4	88	89	90	110	110	111
403	NG MAINTENANCE CENTER	COOK	IL	A9	80	92	112	103	118	144
403	SHERIDAN FORT	LAKE	IL	A9	80	92	112	103	118	144
403	JOLIET AAP ELWOOD	WILL	IL	A9	80	92	112	103	118	144
403	JOLIET AAP KANKAKEE	WILL	IL	A9	80	92	112	103	118	144
404	CUSTER FORT	CALHOUN-KALAMAZOO	MI	A10	96	96	97	113	114	115
405	NG GRAYLING AAF	CRANFORD	MI	A13	89	90	91	115	116	118
406	DETROIT ARSENAL	MACOMB	MI	A16	70	73	76	103	107	112
406	DETROIT ARSENAL TANK PLANT	MACOMB	MI	A16	70	73	76	103	107	112
406	MICHIGAN ARMY MSL PLANT	MACOMB	MI	A16	70	73	76	103	107	112
406	PONTIAC STOR ACT	OAKLAND	MI	A16	70	73	76	103	107	112
406	LIMA ARMY MOD CEN	ALLEN	OH	A18	70	73	76	103	107	112
406	PERRY CAMP ERIE ARMY DEPOT	OTTAWA	OH	A19	70	73	76	103	107	112
407	RAVENNA ARMY AMMUNITION PLANT	PORTAGE/TRUMBULL	OH	A20	83	83	84	99	100	101
407	NG AKRON CANTON APT	SUMMIT	OH	A20	83	83	84	99	100	101
408	SENECA ARMY DEPOT	SENECA	NY	A26	92	92	93	113	113	115
408	DRUM FORT	JEFF/LEWIS/ST LAWREN	NY	A28	92	92	93	113	113	115

REGION - 5

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
502	HAYS ARMY AMMUNITION PLT	WESTMORELAND	PA	A1	87	88	89	106	107	109
503	DEF CONSTR SUP CTR	FRANKLIN	OH	A10	77	78	80	102	103	105
503	NG CAMP SHERMAN	ROSS	OH	A10	77	78	80	102	103	105
504	RADFORD ARMY AMMUNITION PLANT	MONTGOMERY/PULASKI	VA	A6	86	87	88	104	105	107
504	RADFORD ARMY AMMO PLT NEW RIVER	PULASKI	VA	A6	86	87	88	104	105	107
505	LEX BLUE GRASS D ACTIVITY	FAYETTE/BOURBON	KY	A12	90	91	92	113	114	116
505	BLUE GRASS DEPOT ACTIVITY	MADISON	KY	A13	90	91	92	113	114	116
505	INDIANA ARMY AMMUNITION PLANT	CLARK	IN	A15	90	91	92	113	114	116
505	JEFFERSON PROVING GROUND	JEFF/RTPLEY/JENNINGS	IN	A15	90	91	92	113	114	116
505	KNOX FORT	HARDIN/MEADE/BULLITT	KY	A15	90	91	92	113	114	116
506	ATTERBURY RES FORCES TNG AREA	JOHNSON/BARTHO/BROWN	IN	A14	74	75	76	111	111	114
506	HARRISON FORT BENJAMIN	MARION	IN	A14	74	75	76	111	111	114
506	NEWPORT AAP	VERMILION	IN	A14	74	75	76	111	111	114
507	CAMPBELL FT	CHRIST/GRIGMON/STE TN	KY	A18	88	89	89	115	116	117

TABLE 5
ARMY INSTALLATIONS BY REGION
REGION - 6

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
601	HOLSTON ARMY AMMO PLT	SULLIVAN/HANKINS	TN	A1	94	95	96	112	113	114
601	NG CATOOSA RIFLE RANGE	CATOOSA	GA	A5	94	95	96	112	113	114
601	VOLUNTEER AAP	HAMILTON	TN	A5	94	95	96	112	113	114
602	PHOSPHATE DEV WKS	COLBERT	AL		95	96	97	107	108	109
602	REDSTONE ARSENAL	MADISON	AL		95	96	97	107	108	109

REGION - 7

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
701	TWIN CITIES AR AMMUNITION PLT	RAMSEY	MN	B23	85	86	87	135	137	138
702	MCCOY FORT	MONROE	WI	A17	91	92	93	117	118	119
702	GADGER ARMY AMMUNITION PLANT	SAUK	WI	A18	91	92	93	117	118	119
703	SAVANNA ARMY DEPOT	CARR/JO DAV	IL	A1	89	89	90	122	123	125
703	DES MOINES FORT	POLK	IA	A34	89	89	90	122	123	125
703	IOWA AAP	DES MOINES	IA	A2	89	89	90	122	123	125
703	ROCK ISLAND ARS	ROCK ISLAND	IL	A13	89	89	90	122	123	125
704	NG LINCOLN ORD DEPOT	SANGAMON	IL	B7	91	92	94	119	120	122
705	USA ST LOUIS AREA SUPPORT CTN	MADISON	IL	A3	94	98	100	123	127	130
705	GATEWAY ARMY AMMUNITION PLANT	ST CHARLES	MO	A3	94	98	100	123	127	130
705	WELDON SPRING RES FCS TNG	ST CHARLES	MO	A3	94	98	100	123	127	130
705	ST LOUIS AAP	ST LOUIS	MO	A3	94	98	100	123	127	130

REGION - 8

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
801	MILAN ARMY AMMUNITION PLANT	CARROLL/GIBSON	TN	A1-6	85	87	88	129	132	134
801	DEFENSE DEPOT MEMPHIS	SHELBY	TN	A1-7	85	87	88	129	132	134
802	NG CAMP MC CAIN	GRENADE	MS	A2-1	85	87	88	128	131	133
802	PINE BLUFF ARS IND	JEFFERSON	AR	A2-3	85	87	88	128	131	133
802	NG CAMP LIVINGSTON	RAPIDES/GRANT	LA		85	87	88	128	131	133
803	POLK FORT	VERNON/SABINE/NATCHI	LA	***	85	87	88	128	131	133
803	NEW ORLEANS ARMY BASE	ORLEANS	LA	A3-1	86	87	89	129	132	134

TABLE 5

ARMY INSTALLATIONS BY REGION

REGION - 9

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
901	MICKELSON STANLEY R SFG RSL 1	CAVALIER	ND		62	63	67	110	113	122
901	MICKELSON STANLEY R SFG RSL 2	CAVALIER	ND		62	63	67	110	113	122
901	US ARMY SAFEGUARD CMD MSR	CAVALIER	ND	A14	62	63	67	110	113	122
901	US ARMY SAFEGUARD CMD RSL 3	CAVALIER	ND	A14	62	63	67	110	113	122
901	US ARMY SAFEGUARD CMD PAR	PERBINA	ND	A15	62	63	67	110	113	122
901	US ARMY SAFEGUARD CMD RSL 4	WALSH	ND	A14	62	63	67	110	113	122
901	US ARMY SAFEGUARD CMD MTR	WALSH	ND	B13	62	63	67	110	113	122

REGION - 10

ASR INSTALLATION

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
1002	NG FT WM HENRY HARRISON	LEWIS AND CLARK	MT		82	99	99	104	128	129
1007	FITZSIMMONS ARMY MEDICAL CENTER	ADAMS	CO	B23	140	137	147	160	157	168
1007	ROCKY Mtn ARS	ADAMS	CO	B23	140	137	147	160	157	168
1008	CORNHUSKER AR AMMUNITION PLT	HALL	NE	B25	103	110	113	122	131	134
1008	NG HEAD	SAUNDERS	NE	B24	103	110	113	122	131	134
1009	DEF IND PLT EQP FAC	ATCHISON	KS		91	102	106	107	121	126
1010	SCHILLING MANOR	SALINE	KS	B27	123	127	126	191	198	196
1010	RILEY FORT	GEARY/RILEY	KS		123	127	126	191	198	196
1010	LEAVENWORTH FORT	LEAVENWORTH	KS		123	127	126	191	198	196
1011	WOOD FT LEONARD REC AR OZ	CAMDEN	MO	A7	87	94	97	120	131	134
1011	WOOD FT LEONARD	LACLEDE/PHFLPS/PULAS	MO		87	94	97	120	131	134
1011	NG CAMP CLARK	VERNON	MO		87	94	97	120	131	134
1011	SUNFLOWER AAP	JOHNSON	KS	B26	87	94	97	120	131	134
1011	LAKE CITY ARMY AMMUNITION PLT	JACKSON	MO	B26	87	94	97	120	131	134

TABLE 5

ARMY INSTALLATIONS BY REGION

REGION - 11

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
1102	CARSON FORT	EL PASO	CO	AC-1	134	131	123	175	169	155
1102	PUEBLO ARMY DEPOT	PUEBLO	CO	AC-1	134	131	123	175	169	155
1104	KANSAS AAP	LABETTE	KS		83	86	87	152	156	158
1104	CHAFFEE FORT	SEBASTIAN/FRANKLIN	AR	AA-3 BA-5	83	86	87	152	156	158
1104	GRUBER CAMP	MUSKOGEE	OK	AO-3	83	86	87	152	156	158
1106	SILL FORT	COMANCHE	OK	AO-5	129	136	133	180	190	195
1107	LOUISIANA AAP	WEBSTER/BOSSIER	LA	AL-1 BL-2	83	84	84	133	135	134
1107	LONE STAR ARMY AMMUNITION PLT	HOWIE	TX	AT-1 AT-2	83	84	84	133	135	134
1107	RED RIVER AR DEPUT	HOWIE	TX	AT-1 AT-2	83	84	84	133	135	134
1107	LUNGHORN AAP	HARRISON	TX	AT-1 AT-2	83	84	84	133	135	134

REGION - 12

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
1202	SAGINAW ARMY AIRCRAFT PLANT	TARRANT	TX	A16 A17	89	92	102	176	182	201
1203	MOLTERS FORT	PARKER/PALO PINTO	TX	A16 A17 B2	142	126	114	327	287	256
1203	HOOD FORT	BELL/CORYELL	TX	A16 A17	142	126	114	327	287	256
1204	NG CAMP SWIFT	RASTROP	TX	A16 A17	119	110	106	188	172	164
1205	HOUSTON FORT SAM	BEXAR	TX	A16 A17 B9	96	98	96	182	186	183
1205	STANLEY CAMP	BEXAR	TX	A16 A17 B9	96	98	96	182	186	183
1205	BULLIS CAMP	BEXAR/COMAL	TX	A16 A17 B9	96	98	96	182	186	183

A-107

REGION - 13

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
1302	BLISS FORT AAA RANGES	SOCORRO/UTERO	NM	AN-1 AN-3 AN-5	140	153	152	165	182	180
1302	BLISS FORT	EL PASO	TX	AT-1 AT-4 AT-5 AT-6	140	153	152	165	182	180
1302	WHITE SANDS MSL PG	LINC/OTER/SIER	NM	AN-1 AN-5	140	153	152	165	182	180

REGION - 14

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
1402	GREEN RIVER TFST COMPLEX	GRAND	UT	A3	80	81	82	106	107	109

TABLE 5

ARMY INSTALLATIONS BY REGION

REGION - 15

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
1501	HUACHUCA FT WILLCOX AREA	GRAHAM/NAVAJO	AZ	A0-1 A0-2 A1-2 A3-2	81	95	102	102	121	129
1501	WINGATE FT DEP ACTIVITY	MC KINLEY	NM	A0-1 A0-2 A1-1	81	95	102	102	121	129
1502	NAVAJO DEPOT ACTIVITY	COCONINO	AZ	A0-1 A0-2 A2-1	225	237	240	239	252	258
1502	LAKE MEAD BASE	CLARK	NV	A0-1 A0-2 A2-4	225	237	240	239	252	258
1502	YUMA PROVING GROUND	YUMA	AZ	A0-1 A0-2 A2-5	225	237	240	239	252	258
1503	HUACHUCA FT	COCHISE	AZ	A0-1 A0-2 A3-3	304	311	304	315	322	314
1503	NG FLORENCE	PINAL	AZ	A0-1 A0-2 A3-6	304	311	304	315	322	314
1503	HUACHUCA FT GILA BEND AREA	MARICOPA/YUMA	AZ	A0-1 A0-2 A3-4	304	311	304	315	322	314

REGION - 16

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
1601	NG CAMP WILLIAMS	SALT LAKE/UTAH	UT	A3	79	77	79	100	98	100
1601	DUGWAY PROVING GROUND	TOOELE	UT	A3	79	77	79	100	98	100
1601	TOOELE ARMY DEPOT	TOOELE	UT	A3	79	77	79	100	98	100
1601	TOOELE ARMY DEPOT SOUTH AREA	TOOELE	UT	A3	79	77	79	100	98	100
1601	DEFENSE DEPOT OGDEN	WEBER	UT	A2	79	77	79	100	98	100

REGION - 17

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
1701	FORT MISSOULA	MISSOULA	MT		62	63	63	73	75	75
1702	YAKIMA FIRING CENTER	YAKIMA-KITTITAS	WA		79	81	81	94	96	97
1702	UMATILLA DEPOT ACTIVITY	UMATILLA/MORROW	OR	A4	79	81	81	94	96	97
1705	VANCOUVER BARRACKS	CLARK	WA	A4	85	86	86	102	104	104
1706	LAWTON FORT	KING	WA	A2	81	82	82	96	96	96
1706	LEWIS FORT	PIERCE/THURSTON	WA	A2	81	82	82	96	96	96

TABLE 5
ARMY INSTALLATIONS BY REGION
REGION - 18

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
1802	SIERRA ARMY DEPOT	LASSEN	CA		76	88	97	106	122	134
1802	SACRAMENTO ARMY DEP	SACRAMENTO	CA	A021	76	88	97	106	122	134
1803	RIVERSBANK AAP	STANISLAUS	CA	A031	109	114	123	131	137	148
1803	DEFENSE DEPOT TRACY	SAN JOAQUIN	CA		109	114	123	131	137	148
1803	SHARPE ARMY DEPOT	SAN JOAQUIN	CA		109	114	123	131	137	148
1804	OAKLAND ARMY BASE	ALAMEDA	CA	B042	91	96	100	152	161	168
1804	PARKS CAMP	ALAMEDA/CONTRA COSTA	CA	R042	91	96	100	152	161	168
1804	BAKER FORT EAST	MARIN	CA	R042	91	96	100	152	161	168
1804	SAN FRANCISCO PRESIDIO OF	SAN FRANCISCO	CA	R042	91	96	100	152	161	168
1804	RIO VISTA STORAGE AREA FACILITY	SOLANO	CA	R023	91	96	100	152	161	168
1804	HF RAD SANTA ROSA	SONOMA	CA	A051	91	96	100	152	161	168
1805	HUNTER LIGGETT FORT	MONTEREY	CA	A051	83	91	94	169	184	192
1805	MONTEREY PRESIDIO OF	MONTEREY	CA	A051	83	91	94	169	184	192
1805	ORD FORT	MONTEREY	CA	A051	83	91	94	169	184	192
1805	NG CAMP ROBERTS	MONTEREY/SAN LUIS OB	CA	A051	83	91	94	169	184	192
1805	ROBERTS CAMP ANNEX	SAN LUIS OBISPO	CA	A051	83	91	94	169	184	192
1805	BRANCH USDB LOMPOC	SANTA BARBARA	CA		83	91	94	169	184	192
1806	LAMDALE ARMY MISSILE PLANT	LOS ANGELES	CA	B062	107	97	96	116	105	105
1806	MACARTHUR FORT	LOS ANGELES	CA	B062	107	97	96	116	105	105
1806	IRWIN FORT	SAN BERNARDINO	CA		107	97	96	116	105	105
1806	IRWIN FORT ANNEX	SAN BERNARDINO	CA		107	97	96	116	105	105

REGION - 19

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
1901	BLACK RAPIDS TNG SITE	FAIRBANKS	AK	A1	95	95	95	108	108	108
1901	CLEARWATER LAKE TNG SITE	FAIRBANKS	AK	A1	95	95	95	108	108	108
1901	FAIRBANKS PERMAFROST STATION	FAIRBANKS	AK	A1	95	95	95	108	108	108
1901	GERSTLE RIVER ARCTIC TEST	FAIRBANKS	AK	A1	95	95	95	108	108	108
1901	GREELY FORT	FAIRBANKS	AK	A1	95	95	95	108	108	108
1901	MAINWRIGHT FORT	FAIRBANKS	AK	A1	95	95	95	108	108	108
1901	YUKON COMD TNG SITE	FAIRBANKS	AK	A1	95	95	95	108	108	108
1901	EKLUTNA DISPERSAL SITE	ANCHORAGE	AK	A5	95	95	95	108	108	108
1901	EKLUTNA MTN GLACIER SITE	ANCHORAGE	AK	A5	95	95	95	108	108	108
1901	NG CAMP CARROLL	ANCHORAGE	AK	A5	95	95	95	108	108	108
1901	NIKE ALASKA BAY	ANCHORAGE	AK	A5	95	95	95	108	108	108
1901	RICHARDSON FORT	ANCHORAGE	AK	A5	95	95	95	108	108	108
1901	GULKANA ARMY SITE	VALDEZ-CHITINA-WHITT	AK	A7	95	95	95	108	108	108

TABLE 5

ARMY INSTALLATIONS BY REGION

REGION - 20

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
2001	KILAUEA MIL RES	HAWAII	HI	81-2	62	62	62	78	78	79
2001	POHAKULOA TNG AREA	HAWAII	HI	81-2	62	62	62	78	78	79
2003	ALIAMANU MIL RES	HONOLULU	HI	86-3	80	82	85	111	113	118
2003	DE RUSSY FORT	HONOLULU	HI	86-3	80	82	85	111	113	118
2003	DILLINGHAM MIL RES	HONOLULU	HI	86-6	80	82	85	111	113	118
2003	HELEMANO RAD REC STA	HONOLULU	HI	86-6	80	82	85	111	113	118
2003	HONOLULULI MIL RES	HONOLULU	HI	86-3	80	82	85	111	113	118
2003	KAENA POINT MIL RES	HONOLULU	HI	86-3	80	82	85	111	113	118
2003	KAHUKU TNG AREA	HONOLULU	HI	86-5	80	82	85	111	113	118
2003	KAMEHAMEHA FORT	HONOLULU	HI	86-6	80	82	85	111	113	118
2003	KAPALANA MIL RES	HONOLULU	HI	86-3	80	82	85	111	113	118
2003	KIPAPA AMMO STOR SITE	HONOLULU	HI	86-3	80	82	85	111	113	118
2003	MAKUA MIL RES	HONOLULU	HI	86-6	80	82	85	111	113	118
2003	RUGER FORT	HONOLULU	HI	86-6	80	82	85	111	113	118
2003	SCHOFIELD BKS MIL RES	HONOLULU	HI	86-3	80	82	85	111	113	118
2003	SHAFTER FORT	HONOLULU	HI	86-4	80	82	85	111	113	118
2003	TRIPLER ARMY MEDICAL CENTER	HONOLULU	HI	86-3	80	82	85	111	113	118
2003	MAIANAE KAI MIL RES	HONOLULU	HI	86-3	80	82	85	111	113	118
2003	MAIANA MILITARY RESERVATION	HONOLULU	HI	86-6	80	82	85	111	113	118
2003	MAIKAKALAU AMMO STOR TUNNELS	HONOLULU	HI	86-6	80	82	85	111	113	118

R6-6

TABLE 6. AIR FORCE INSTALLATIONS BY REGION

This table provides a list of the Air Force installations from Table 2, grouping them by water resource region and by aggregated subregion. Data shown in the columns are described below.

- ASR -- Aggregated Subregion in which the installation is located.
- COUNTY -- Name of the county in which the installation is located.
- ST -- State in which the installation is located.
- PROBLEMS -- Specifically identified water and land-related resource problems for the area in which the installation is located. The alpha prefix identifies the category of problem (A-- a severe problem identified but not yet under study, and B--a severe problem already under study). An abbreviated description of the problem may be found in Appendix B by noting the region and problem numbers for the installation in this table. Example: Caswell Air Force Station in Region 1 with Problem Number A1. Turning to Appendix B, find Region 1 and Problem Number A1. (In Appendix B, Category A problems are listed first in numerical order, followed by Category B problems in numerical order.) Where a second alpha indicator appears, it is the first letter in the state where the installation is located. All problem numbers are the same as those found in the Second National Water Assessment in order to facilitate reference to them.
- 75 85 00 75 85 00 -- These are projections for the years 1975, 1985, and 2000. The first set is for an average year and the second set is for a dry year (see text for definitions of average year and dry year). The projections are a ratio of requirements/supply for the entire ASR in which the installation is located. The projections should only be used as indicators of a general condition and not as specific indicators of available water in the vicinity of the installation. Each projection was derived by the Water Resources Council by taking the projected water requirements for one year in the ASR and dividing them by the projected water supply available for one year in the ASR.

TABLE 6

AIR FORCE INSTALLATIONS BY REGION

REGION - 1

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
101	CASWELL AIR FORCE STATION	ARROOSTOOK	ME	A1	88	88	89	107	107	108
101	LORING AIR FORCE BASE	ARROOSTOOK	ME	A1	88	88	89	107	107	108
101	LORING FAMILY HOUSING ANNEX	ARROOSTOOK	ME	A1	88	88	89	107	107	108
101	LORING FAMILY HOUSING ANNEX NO 2	ARROOSTOOK	ME	A1	88	88	89	107	107	108
101	LORING FAMILY HOUSING ANNEX NO 3	ARROOSTOOK	ME	A1	88	88	89	107	107	108
101	LORING FAMILY HOUSING ANNEX NO 4	ARROOSTOOK	ME	A1	88	88	89	107	107	108
101	LORING FAMILY HOUSING ANNEX NO 5	ARROOSTOOK	ME	A1	88	88	89	107	107	108
101	LOUIS RLOTNER RADAR BOMB SCORING SITE	ARROOSTOOK	ME	A1	88	88	89	107	107	108
101	LUCKS HARBOR AIR FORCE STATION	WASHINGTON	ME	A1	88	88	89	107	107	108
101	BUCKS HARBOR FAMILY HOUSING ANNEX	WASHINGTON	ME	A2	88	88	89	107	107	108
101	HANGOR HOUSING SITE 3	WASHINGTON	ME	A2	88	88	89	107	107	108
101	BANGOR INTERNATIONAL AIRPORT (ANG)	PENOBSCOT	ME	A3	88	88	89	107	107	108
101	CHARLESTON AIR FORCE STATION	PENOBSCOT	ME	A3	88	88	89	107	107	108
101	CHARLESTON FAMILY HOUSING ANNEX	PENOBSCOT	ME	A3	88	88	89	107	107	108
102	SOUTH PORTLAND ANG STATION	PENOBSCOT	ME	A3	88	88	89	107	107	108
102	PEASE AIR FORCE BASE	CUMBERLAND	ME	A7	89	89	90	107	107	108
102	NEW HAMPSHIRE SATELLITE TRACKING ANNEX	ROCKINGHAM	NH	A9	89	89	90	112	113	113
103	NO TRURO FAMILY HOUSING ANNEX	HILLSBORO	NH	A10	89	89	90	112	113	113
103	OTIS AIR FORCE BASE	BARNSTABLE	MA	B11	88	89	90	105	106	108
103	AIR FORCE PLANT NO 29	BARNSTABLE	MA	B11	88	89	90	105	106	108
103	AIR FORCE PLANT NO 28	BARNSTABLE	MA	B11	88	89	90	105	106	108
103	HANSCOM AIR FORCE BASE	ESSEX	MA	B11	88	89	90	105	106	108
103	WALTHAM FEDERAL CENTER ANNEX	MIDDLESEX	MA	B11	88	89	90	105	106	108
103	WELLESLEY ANG STATION	MIDDLESEX	MA	B11	88	89	90	105	106	108
103	AIR FORCE PLANT NO 63	NORFOLK	MA	B11	88	89	90	105	106	108
103	WORCESTER ANG STATION	WORCESTER	MA	B13	88	89	90	105	106	108
103	CONVENTRY ANG STATION	WORCESTER	MA	B13	88	89	90	105	106	108
103	NORTH SMITHFIELD ANG STATION	KENT	RI	B14	88	89	90	105	106	108
103	THEODORE F GREEN MUNICIPAL AIRPORT	KENT	RI	B14	88	89	90	105	106	108
104	ORANGE ANG COMMUNICATION STATION	NEW HAVEN	CT	B16	88	89	90	114	117	118
104	STORPS BACHELOR HOUSING SITE	TOLLAND	CT	A19	89	89	90	114	117	118
105	BARNES MUNICIPAL AIRPORT	HARTFORD	CT	B16	89	90	92	112	113	116
105	WESTOVER AIR FORCE BASE	HAMPDEN	MA	B16	89	90	92	112	113	116
106	PLATTSMURGH AIR FORCE BASE	HAMPDEN	MA	B16	89	90	92	112	113	116
106	BURLINGTON FAMILY HOUSING ANNEX	CLINTON	NY	A20	88	88	88	113	113	114
106	BURLINGTON INTERNATIONAL AIRPORT	CHITTENDEN	VT	A20	88	88	88	113	113	114
106	ST ALBANS AIR FORCE STATION	FRANKLIN	VT	A20	88	88	88	113	113	114
106	ST ALBANS FAMILY HOUSING ANNEX	FRANKLIN	VT	A20	88	88	88	113	113	114

TABLE 6

AIR FORCE INSTALLATIONS BY REGION

REGION - 2

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
201	AVA TEST ANNEX	ONEIDA	NY	R1	90	90	91	119	120	121
201	FLOYD TEST ANNEX	ONEIDA	NY	R1	90	90	91	119	120	121
201	GRIFFISS AIR FORCE BASE	ONEIDA	NY	R1	90	90	91	119	120	121
201	VERONA TEST ANNEX	ONEIDA	NY	R1	90	90	91	119	120	121
201	SARATOGA AIR FORCE STATION	SARATOGA	NY	R2	90	90	91	119	120	121
201	SARATOGA FAMILY HOUSING ANNEX	SARATOGA	NY	R2	90	90	91	119	120	121
201	SCHENECTADY AIRPORT ANG	SCHENECTADY	NY	R2	90	90	91	119	120	121
202	ROSLYN AIR NATIONAL GUARD STATION	MASSAU	NY	R4	90	91	92	120	121	123
202	MONTAUK AIR FORCE STATION	SUFFOLK	NY	R4	90	91	92	120	121	123
202	SUFFOLK COUNTY AIRPORT ANG	SUFFOLK	NY	R4	90	91	92	120	121	123
202	WESTCHESTER COUNTY MUNICIPAL APT ANG	WESTCHESTER	NY	R5	90	91	92	120	121	123
203	DOVER AIR FORCE BASE	KENT	DE	R10	89	90	91	113	114	116
203	DOVER FAMILY HOUSING ANNEX	KENT	DE	R10	89	90	91	113	114	116
203	GREATER WILMINGTON AIRPORT	NEW CASTLE	DE	R10	89	90	91	113	114	116
203	ATLANTIC CITY AIRPORT ANG	ATLANTIC	NJ	R12	89	90	91	113	114	116
203	ATLANTIC CITY FAMILY HOUSING ANNEX	ATLANTIC	NJ	R12	89	90	91	113	114	116
203	MCGUIRE AIR FORCE BASE	BURLINGTON	NJ	R12	89	90	91	113	114	116
203	GIBBSBORO AIR FORCE STATION	CAMDEN	NJ	R10	89	90	91	113	114	116
203	GIBBSBORO FAMILY HOUSING ANNEX	CAMDEN	NJ	R10	89	90	91	113	114	116
203	PALMERO COMMUNICATIONS FACILITY	CAPE MAY	NJ	R10	89	90	91	113	114	116
203	WILLOW GROVE AIR RESERVE FACILITY	MONTGOMERY	PA	R10	89	90	91	113	114	116
203	PHILADELPHIA JAP COMM STN (ANG)	PHILADELPHIA	PA	R10	89	90	91	113	114	116
204	AIR FORCE PLANT NO 59	BROOME	NY	R13	87	87	88	107	108	109
204	STATE COLLEGE ANG STATION	CENTRE	PA	R14	87	87	88	107	108	109
204	NEW CUMBERLAND RECRUITING FAM HSG SITE	CUMBERLAND	PA	R17	87	87	88	107	108	109
204	HARRISBURG INTERNATIONAL APT OLMSTED FLD	DAUPHIN	PA	R16	87	87	88	107	108	109
204	FT INDIANTOWN GAP ANG STATION	LEBANON	PA	R16	87	87	88	107	108	109
204	SHAVERTOWN FAMILY HOUSING SITE	LUTERNE	PA	R16	87	87	88	107	108	109
204	BENTON AIR FORCE STATION	SULLIVAN	PA	R16	87	87	88	107	108	109
205	DAVIDSONVILLE FAMILY HOUSING ANNEX	ANNE ARUNDEL	MD	R18	85	86	87	111	113	115
205	GOVERNORS BRIDGE GLOBECOM ANNEX	ANNE ARUNDEL	MD	R18	85	86	87	111	113	115
205	AIR FORCE PLANT NO 50	BALTIMORE	MD	R18	85	86	87	111	113	115
205	MARTIN AIRPORT AIR NATIONAL GUARD	BALTIMORE	MD	R18	85	86	87	111	113	115
205	LANGLEY AIR FORCE BASE	HAMPTON	VA	R27	85	86	87	111	113	115
205	BYRD FIELD	HENRICO	VA	R26	85	86	87	111	113	115
205	CAPE CHARLES AIR FORCE STATION	NORTHAMPTON	VA	R19	85	86	87	111	113	115
205	SHIP SHAOL ISLAND AIR FORCE RANGE	NORTHAMPTON	VA	R19	85	86	87	111	113	115
205	FORT LEE AIR FORCE STATION	PRINCE GEORGE	VA	R26	85	86	87	111	113	115
205	LANGLEY FAMILY HOUSING ANNEX	YORK	VA	R27	85	86	87	111	113	115
206	ROLLING AIR FORCE BASE	DIST OF COL	DC	R22	84	85	87	113	114	117
206	CHESAPEAKE STREET OFFICER HOUSING ANNEX	DIST OF COL	DC	R22	84	85	87	113	114	117
206	WILBURN FAMILY HOUSING ANNEX	DIST OF COL	DC	R22	84	85	87	113	114	117
206	ANDREWS AIR FORCE BASE	PRINCE GEORGES	MD	R22	84	85	87	113	114	117
206	BRANDYWINE FAMILY HOUSING ANNEX	PRINCE GEORGES	MD	R22	84	85	87	113	114	117
206	BRANDYWINE GLOBECOM ANNEX	PRINCE GEORGES	MD	R22	84	85	87	113	114	117
206	FT MEADE FAMILY HOUSING ANNEX	PRINCE GEORGES	MD	R22	84	85	87	113	114	117

TABLE 6
AIR FORCE INSTALLATIONS BY REGION
REGION - 2

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
206	SUITLAND HALL ADMINISTRATION ANNEX	PRINCE GEORGES	MD	B22	84	85	87	113	114	117
206	MANASSAS COMMUNICATIONS FACILITY ANNEX	PRINCE WILLIAM	VA	B22	84	85	87	113	114	117
206	MANASSAS FAMILY HOUSING ANX	PRINCE WILLIAM	VA	B22	84	85	87	113	114	117
206	EASTERN MVA REGIONAL APT	BERKELEY	WV	B22	84	85	87	113	114	117
206	MARTINSBURG FAMILY HOUSING SITE	BERKELEY	WV	B22	84	85	87	113	114	117

TABLE 6

AIR FORCE INSTALLATIONS BY REGION

REGION - 3

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
301	DARE COUNTY RANGE	DARE	NC	A301B	72	73	75	99	100	102
301	REDFORD AIR FORCE STATION	REDFORD	VA	A301A	72	73	75	99	100	102
301	ROADNOKE RAPIDS AIR FORCE STATION	HALIFAX	NC	A302	72	73	75	99	100	102
301	RALPHIGH BACHELOR MSG SITE	WAKE	NC	A302	72	73	75	99	100	102
301	SEYMOUR JOHNSON AIR FORCE BASE	WAYNE	NC	A302	72	73	75	99	100	102
301	POPE AIR FORCE BASE	CUMBERLAND	NC	A303	72	73	75	99	100	102
301	FORT FISHER AIR FORCE STATION	NEW HANOVER	NC	A303	72	73	75	99	100	102
301	FORT FISHER FAMILY HOUSING ANX	NEW HANOVER	NC	A303	72	73	75	99	100	102
302	BADIN ANG STATION	STANLY	NC	A304	81	82	84	115	117	120
302	MYRTLE BEACH AIR FORCE BASE	HORRY	SC	A304	81	82	84	115	117	120
302	POINSETT AIR FORCE RANGE	SUMTER	SC	A304	81	82	84	115	117	120
302	SHAW AIR FORCE BASE	SUMTER	SC	A304	81	82	84	115	117	120
302	DOUGLAS MUNICIPAL AIRPORT	MECHLENBURG	NC	A305A	81	82	84	115	117	120
302	CHARLESTON AIR FORCE BASE	CHARLESTON	SC	A305B	81	82	84	115	117	120
302	NORTH CHARLESTON AIR FORCE STATION	CHARLESTON	SC	A305B	81	82	84	115	117	120
302	GREENVILLE FAMILY HOUSING SITE	GREENVILLE	SC	A305A	81	82	84	115	117	120
302	NORTH AIR FORCE AUXILIARY FIELD	ORANGEBURG	SC	A305B	81	82	84	115	117	120
302	MCENTIRE AIR NATIONAL GUARD BASE	RICHLAND	SC	A305B	81	82	84	115	117	120
303	STATESBORO RADAR BOMB SCORING SITE	BULLOCH	GA	A306	77	78	79	112	113	115
303	SAVANNAH AIR FORCE STATION	CHATHAM	GA	A306	77	78	79	112	113	115
303	SAVANNAH ANG COMMUNICATIONS STATIONS	CHATHAM	GA	A306	77	78	79	112	113	115
303	SAVANNAH ANG MUNICIPAL AIRPORT	CHATHAM	GA	A306	77	78	79	112	113	115
303	SAVANNAH BACHELOR HOUSING ANX	CHATHAM	GA	A306	77	78	79	112	113	115
303	SAVANNAH FAMILY HOUSING SITE	CHATHAM	GA	A306	77	78	79	112	113	115
303	LEWIS B WILSON AIRPORT ANG	BIBB	GA	A307	77	78	79	112	113	115
303	BRUNSWICK FAMILY HOUSING SITE	GLYNN	GA	A307	77	78	79	112	113	115
303	MCKINNON AIRPORT COMMUNICATIONS STATION	GLYNN	GA	A307	77	78	79	112	113	115
303	ROBINS AIR FORCE BASE	HOUSTON	GA	A307	77	78	79	112	113	115
304	CAPE CANAVERAL AIR FORCE STATION	BREVARD	FL	A308	83	84	86	143	146	149
304	PATRICK AIR FORCE BASE	BREVARD	FL	A308	83	84	86	143	146	149
304	JACKSONVILLE AIR FORCE STATION	CLAY	FL	A308	83	84	86	143	146	149
304	JACKSONVILLE FAMILY HOUSING ANNEX	CLAY	FL	A308	83	84	86	143	146	149
304	JACKSONVILLE IAP ANG	DUVAL	FL	A308	83	84	86	143	146	149
304	BRANDON MEDICAL FOOD ANX	HILLSBOROUGH	FL	A310	83	84	86	143	146	149
304	MACDILL AIR FORCE BASE	HILLSBOROUGH	FL	A310	83	84	86	143	146	149
304	GAINESVILLE AFROTC FAMILY MSG SITE	ALACHUA	FL	A311	83	84	86	143	146	149
304	SPENCE AF AUXILIARY FIELD	COLQUITT	GA	A311	83	84	86	143	146	149
304	MOODY AIR FORCE BASE	LOWMEDES	GA	A311	83	84	86	143	146	149
305	HOMESTEAD AIR FORCE BASE	DADE	FL	A309	93	97	103	149	155	165
305	MIAMI BACHELOR MSG SITE	DADE	FL	A309	93	97	103	149	155	165
305	RICHMOND AF STATION	DADE	FL	A309	93	97	103	149	155	165
305	AVON PARK AIR FORCE RANGE	HIGHLANDS	FL	A309	93	97	103	149	155	165
305	AVON PARK AUXILIARY AIRFIELD	HIGHLANDS	FL	A309	93	97	103	149	155	165
305	CUDJOE KEY AIR FORCE STATION	MONROE	FL	A309	93	97	103	149	155	165
306	TALLAHASSEE BACHELOR MSG SITE	LEON	FL	A312	87	88	89	114	115	117

A313

TABLE 6

AIR FORCE INSTALLATIONS BY REGION

REGION - 3

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
306	HALL AIR NATIONAL GUARD STATION	HOUSTON	AL	A312 A313	87	88	89	114	115	117
306	AIR FORCE PLANT NO 6	COBB	GA	A312 A313	87	88	89	114	115	117
306	DOBBS AIR FORCE BASE	COBB	GA	A312 A313	87	88	89	114	115	117
306	MCCOLLUM ANG STATION	COBB	GA	A312 A313	87	88	89	114	115	117
307	COVE GARDENS FAMILY HOUSING ANNEX	RAY	FL	A314	89	90	91	113	113	115
307	TYNDALL AIR FORCE BASE	RAY	FL	A314	89	90	91	113	113	115
307	EGLIN AF AUXILIARY FIELD NO 2	OKALOOSA	FL	A314	89	90	91	113	113	115
307	EGLIN AF AUXILIARY FIELD NO 3	OKALOOSA	FL	A314	89	90	91	113	113	115
307	EGLIN AF AUXILIARY FIELD NO 4	OKALOOSA	FL	A314	89	90	91	113	113	115
307	EGLIN AF AUXILIARY FIELD NO 9	OKALOOSA	FL	A314	89	90	91	113	113	115
307	EGLIN AIR FORCE BASE	OKALOOSA	FL	A314	89	90	91	113	113	115
307	EGLIN AF AUXILIARY FIELD NO 10	SANTA ROSA	FL	A314	89	90	91	113	113	115
307	CRAIG AIR FORCE BASE	DALLAS	AL	A315	89	90	91	113	113	115
307	MARTIN AIR NATIONAL GUARD STATION	ETOWAH	AL	A315	89	90	91	113	113	115
307	DANIELLY FIELD AIR NATIONAL GUARD	WONTGOMERY	AL	A315	89	90	91	113	113	115
307	GUNTER AIR FORCE BASE	WONTGOMERY	AL	A315	89	90	91	113	113	115
307	HUNTER LOOP COMMUNICATIONS FACILITY ANNE	WONTGOMERY	AL	A315	89	90	91	113	113	115
307	MAXWELL AIR FORCE BASE	WONTGOMERY	AL	A315	89	90	91	113	113	115
307	MAXWELL FAMILY HOUSING ANNEX	WONTGOMERY	AL	A315	89	90	91	113	113	115
307	VAIDEN AIR FORCE AUXIL AIRFIELD	PERRY	AL	A315	89	90	91	113	113	115
308	BIRMINGHAM MAP AIR NATIONAL GUARD	JEFFERSON	AL	A316	86	87	87	113	113	113
308	DAUPHIN ISLAND AIR FORCE STATION	MORILE	AL	A316	86	87	87	113	113	113
308	COLUMBUS AIR FORCE BASE	LOWMEDES	MS	A316	82	82	82	117	117	118
309	GULFPORT MAP ANG PERMANENT TRAINING BASE	HARRISON	MS	A317	82	82	82	117	117	118
309	KEESLER AIR FORCE BASE	HARRISON	MS	A317	82	82	82	117	117	118
309	KEESLER TRAINING ANNEX MU 1	HARRISON	MS	A317	82	82	82	117	117	118
309	KEY FIELD AIR NATIONAL GUARD	LAUDERDALE	MS	A317	82	82	82	117	117	118
309	MERIDIAN FAMILY HOUSING SITE	LAUDERDALE	MS	A317	82	82	82	117	117	118
309	ALLEN C THOMPSON FIELD	RANKIN	MS	A318	82	82	82	117	117	118

TABLE 6

AIR FORCE INSTALLATIONS BY REGION

REGION - 4

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
401	FINLAND AIR FORCE STATION	LAKE	MN	A1	88	89	90	110	110	111
401	DULUTH AIR NATIONAL GUARD BASE	ST LOUIS	MN	A2	88	89	90	110	110	111
401	DULUTH FAMILY HOUSING ANNEX	ST LOUIS	MN	A2	88	89	90	110	110	111
401	DULUTH INTERNATIONAL AIRPORT	ST LOUIS	MN	A2	88	89	90	110	110	111
401	KINCHELOE AIR FORCE BASE	CHIPPWA	MI	A4	88	89	90	110	110	111
401	SAULT STE MARIE AIR FORCE STATION	CHIPPWA	MI	A4	88	89	90	110	110	111
401	SAULT STE MARIE COMM FACILITY ANNEX	CHIPPWA	MI	A4	88	89	90	110	110	111
401	CALUMET AIR FORCE STATION	CHIPPWA	MI	A4	88	89	90	110	110	111
401	CALUMET FAMILY HOUSING ANNEX	CHIPPWA	MI	A4	88	89	90	110	110	111
401	K I SANYER AIR FORCE BASE	KEMENAW	MI	A4	88	89	90	110	110	111
403	CHICAGO-O'HARE FAMILY HSG SITE	KEMENAW	MI	A4	88	89	90	110	110	111
403	O'HARE INTERNATIONAL AIRPORT	MARQUETTE	MI	A6	88	89	90	110	110	111
403	GEN MITCHELL FIELD	COOK	IL	A9	88	89	90	110	110	111
403	GENERAL MITCHELL FLD ANG	COOK	IL	A9	80	92	112	103	118	144
403	GREENFIELD FAMILY HOUSING SITE	MILWAUKEE	WI	A8	80	92	112	103	118	144
403	MILWAUKEE ANG WATA BHS SITE	MILWAUKEE	WI	A8	80	92	112	103	118	144
403	MILWAUKEE FAMILY HOUSING SITE	MILWAUKEE	WI	A8	80	92	112	103	118	144
403	MILWAUKEE RECRUITING FAM HSG SITE	MILWAUKEE	WI	A8	80	92	112	103	118	144
404	WK KELLOGG REGIONAL AIRFIELD	WAUKESHA	WI	A8	80	92	112	103	118	144
404	BAYSHORE RADAR BOMB SCORING SITE	CALHOUN	MI	A10	80	92	112	103	118	144
404	EMPIRE AIR FORCE STATION	EMMET	MI	A11	96	96	97	113	114	115
404	EMPIRE FAMILY HOUSING ANNEX	LEELANAU	MI	A13	96	96	97	113	114	115
405	PHILPS COLLINS AIRPORT ANG	LEELANAU	MI	A13	96	96	97	113	114	115
405	PORT AUSTIN AIR FORCE STATION	ALPENA	MI	A13	96	96	97	113	114	115
405	PORT AUSTIN FAMILY HOUSING ANNEX	HURON	MI	A13	89	90	91	115	116	118
405	WURTSMITH AIR FORCE BASE	HURON	MI	A15	89	90	91	115	116	118
406	SELFRIDGE ANG BASE	IOSCO	MI	A13	89	90	91	115	116	118
406	SELFRIDGE FAMILY HOUSING ANNEX NO 2	MACOMB	MI	A16	70	73	76	103	107	112
406	FT WAYNE MUNICIPAL AIRPORT	MACOMB	MI	A16	70	73	76	103	107	112
406	TOLEDO EXPRESS AIRPORT ANG	ALLEN	IN	A18	70	73	76	103	107	112
406	AIR FORCE PLANT NO 27	FULTON	OH	A18	70	73	76	103	107	112
406	CAMP PERRY ANG STATION	LUCAS	OH	A19	70	73	76	103	107	112
407	AIR FORCE PLANT NO 47	OTTAWA	OH	A19	70	73	76	103	107	112
407	AIR FORCE PLANT NO 49	CUYAHOGA	OH	A20	70	73	76	103	107	112
407	AIR FORCE PLANT NO 38	ERIE	NY	A23	83	83	84	99	100	101
407	LOCKPORT AIR FORCE STATION	ERIE	NY	A27	83	83	84	99	100	101
407	LOCKPORT FAMILY HOUSING ANNEX	NIAGARA	NY	A27	83	83	84	99	100	101
407	NIAGARA FALLS INTERNATIONAL AIRPORT	NIAGARA	NY	A27	83	83	84	99	100	101
407	STOCKBRIDGE TEST SITE	NIAGARA	NY	A27	83	83	84	99	100	101
407	YOUNGSTOWN TEST SITE	MADISON	NY	A26	92	92	93	113	113	115
408	HANCOCK FAMILY HOUSING ANNEX	ONONDAGA	NY	A26	92	92	93	113	113	115
408	GREAT BEND RADAR BOMB SCORING SITE	JEFFERSON	NY	A26	92	92	93	113	113	115
408	WATERLOO AIR FORCE STATION	JEFFERSON	NY	A26	92	92	93	113	113	115

TABLE 6

AIR FORCE INSTALLATIONS BY REGION

REGION - 5

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
502	YOUNGSTOWN MUNICIPAL AIRPORT	TRUMBULL	OH	A2	87	88	89	106	107	109
502	GREATER PITTSBURGH ANG BASE	ALLEGHENY	PA	A3	87	88	89	106	107	109
502	GREATER PITTSBURGH INTERNATIONAL AIRPORT	ALLEGHENY	PA	A3	87	88	89	106	107	109
502	AIR FORCE PLANT NO 36	HAMILTON	OH	A9	87	88	89	106	107	109
502	BLUE ASH ANG STATION	HAMILTON	OH	A9	87	88	89	106	107	109
503	NEWARK AIR FORCE STATION	LICKING	OH	A5	77	78	80	102	103	105
503	ZANESVILLE ANG STATION	MUSKINGUM	OH	A5	77	78	80	102	103	105
503	MANSFIELD LAHM AIRPORT ANG	RICHLAND	OH	A5	77	78	80	102	103	105
503	RICKENBACKER AIR FORCE BASE	FRANKLIN	OH	A10	77	78	80	102	103	105
503	SPRINGFIELD FAMILY HOUSING SITE NO 1	CLARK	OH	A11	77	78	80	102	103	105
503	SPRINGFIELD MUNICIPAL AIRPORT ANG	CLARK	OH	A11	77	78	80	102	103	105
503	WRIGHT PATTERSON AIR FORCE BASE	GREENE	OH	A9	77	78	80	102	103	105
503	GENTILE DEFENSE ELECTRONICS SUPPLY CTR	MONTGOMERY	OH	A11	77	78	80	102	103	105
504	ELKVIEW FAMILY HOUSING SITE	KANAWHA	WV	A7	86	87	88	104	105	107
504	KANAWHA COUNTY AIRPORT (ANG)	KANAWHA	WV	A7	86	87	88	104	105	107
505	RICHMOND RADAR BOMB SCORING SITE	MADISON	KY	A13	90	91	92	113	114	116
505	LOUISVILLE FAMILY HOUSING ANNEX	JEFFERSON	KY	A15	90	91	92	113	114	116
505	LOUISVILLE FAMILY HOUSING SITE	JEFFERSON	KY	A15	90	91	92	113	114	116
505	STANDIFORD FIELD ANG	JEFFERSON	KY	A15	90	91	92	113	114	116
506	CHANUTE AIR FORCE BASE	CHAMPAIGN	IL	A14	74	75	76	111	111	114
506	CHANUTE FAMILY HOUSING ANNEX	CHAMPAIGN	IL	A14	74	75	76	111	111	114
506	GRISWOLD AIR FORCE BASE	MIAMI	FL	A14	74	75	76	111	111	114
506	MULMAN FIELD	VIGO	IN	A14	74	75	76	111	111	114
507	NASHVILLE METROPOLITAN AIRPORT	DAVIDSON	TN	A18	88	89	89	115	116	117

REGION - 6

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
601	ALCOA AIR NATIONAL GUARD STATION	BLOUNT	TN		94	95	96	112	113	114
601	KNOXVILLE FAMILY HOUSING SITE	BLOUNT	TN		94	95	96	112	113	114
601	MCCHEE TYSON AIRPORT	BLOUNT	TN		94	95	96	112	113	114
601	CHATTANOOGA FAMILY HOUSING SITE	HAMILTON	TN	A5	94	95	96	112	113	114
601	LOVELL FIELD AIR NATIONAL GUARD	HAMILTON	TN	A5	94	95	96	112	113	114
602	ARNOLD ENGINEERING DEVELOP CENT	COFFEE	TN		95	96	97	107	108	109

TABLE 6

AIR FORCE INSTALLATIONS BY REGION

REGION - 7

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
701	MINNEAPOLIS FAMILY HOUSING SITE	HENNEPIN	MN	823	85	86	87	135	137	138
701	MINNEAPOLIS RECRUITING FAM HSG SITE	HENNEPIN	MN	823	85	86	87	135	137	138
701	MINNEAPOLIS ST PAUL INTL APT	HENNEPIN	MN	823	85	86	87	135	137	138
701	ROSEVILLE BACHELOR HSG SITE	RAMSEY	MN	823	85	86	87	135	137	138
702	MINNEAPOLIS AFROTC FAM HSG SITE	RICE	MN		91	92	93	117	118	119
702	VOLK FIELD AIR NATIONAL GUARD BASE	JUNEAU	WI	A18	91	92	93	117	118	119
702	ANTIGO AIR FORCE STATION	MARATHON	WI	A19	91	92	93	117	118	119
702	ANTIGO COMMUNICATIONS FACILITY ANNEX	MARATHON	WI	A19	91	92	93	117	118	119
703	TRUAX FIELD	DANE	WI	A16	89	89	90	122	123	125
703	DES MOINES MUNICIPAL AIRPORT ANG	POLK	IA	A34	89	89	90	122	123	125
703	FORT DODGE AIR NATIONAL GUARD	WEBSTER	IA	A34	89	89	90	122	123	125
704	GREATER PEORIA AIRPORT ANG	PEORIA	IL	A9	91	92	94	119	120	122
704	CAPITAL MUNICIPAL AIRPORT ANG	SANGAMON	IL	B7	91	92	94	119	120	122
705	SCOTT AIR FORCE BASE	ST CLAIR	IL	A3	94	98	100	123	127	130
705	AIR FORCE PLANT NO 84	ST LOUIS	MO	A3	94	98	100	123	127	130
705	JEFFERSON BARRACKS ANG STATION	ST LOUIS	MO	A3	94	98	100	123	127	130
705	LAMBERT ST LOUIS IAP ANG	ST LOUIS	MO	A3	94	98	100	123	127	130
705	ST LOUIS AIR FORCE STATION	ST LOUIS	MO	A3	94	98	100	123	127	130
705	ST LOUIS FAMILY HOUSING ANX	ST LOUIS	MO	A3	94	98	100	123	127	130
705	WEBSTER GROVES FAMILY HOUSING SITE	ST LOUIS	MO	A3	94	98	100	123	127	130

A-119

REGION - 8

ASR INSTALLATION

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
801	MEMPHIS INTERNATIONAL AIRPORT	SHELBY	TN	A1-8	85	87	88	129	132	134
801	BLYTHEVILLE AIR FORCE BASE	MISSISSIPPI	AR	B1-16	85	87	88	129	132	134
802	HOT SPRING MEMORIAL FIELD ANG	GARLAND	AR		85	87	88	128	131	133
802	HOT SPRINGS FAMILY HOUSING SITE	GARLAND	AR		85	87	88	128	131	133
802	RUSTON BACHELOR HSG SITE	LINCOLN	LA		85	87	88	128	131	133
802	CLAIBORNE AIR FORCE RANGE	RAPIDES	LA		85	87	88	128	131	133
802	ENGLAND AIR FORCE BASE	RAPIDES	LA		85	87	88	128	131	133
803	HAMMOND ANG COMMUNICATION STATION	TANGIPAHOA	LA		86	87	89	129	132	134
803	LAKE CHARLES AIR FORCE STATION	CALCASIEU	LA	A3-7	86	87	89	129	132	134
803	JACKSON BARRACKS ANG STATION	ORLEANS	LA	A3-1	86	87	89	129	132	134
803	KEESLER OFFICER HOUSING ANNEX	ORLEANS	LA	A3-1	86	87	89	129	132	134
803	NEW ORLEANS OLCA OFFICE	ORLEANS	LA	A3-1	86	87	89	129	132	134
803	NEW ORLEANS NAS ANG	PLAQUEMINES	LA	A3-1	86	87	89	129	132	134

TABLE 6
AIR FORCE INSTALLATIONS BY REGION
REGION - 9

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
901	FORTUNA AIR FORCE STATION	DIVIDE	ND	B1	62	63	67	110	113	122
901	MINOT AIR FORCE BASE	WARD	ND	A4	62	63	67	110	113	122
901	MINOT AIR FORCE STATION	WARD	ND	A4	62	63	67	110	113	122
901	HECTOR FIELD AIR NATIONAL GUARD	CASS	ND	A9	62	63	67	110	113	122
901	GRAND FORKS AIR FORCE BASE	GRAND FORKS	ND	A16	62	63	67	110	113	122
901	FINLEY AIR FORCE STATION	STEELE	ND		62	63	67	110	113	122
901	FINLEY FAMILY HOUSING ANNEX	STEELE	ND		62	63	67	110	113	122
901	BAUDETTE AIR FORCE STATION	LAKE OF WOOD	MN	A27	62	63	67	110	113	122
901	BAUDETTE FAMILY HOUSING ANNEX	LAKE OF WOOD	MN	A27	62	63	67	110	113	122

TABLE 6

AIR FORCE INSTALLATIONS BY REGION

REGION - 10

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
1001	HAVRE AIR FORCE STATION	HILL	MT		82	101	102	105	131	133
1001	HAVRE FAMILY HOUSING ANX	HILL	MT		82	101	102	105	131	133
1001	GLASGOW AIR FORCE BASE	VALLEY	MT		82	101	102	105	131	133
1001	OPHEIM AIR FORCE STATION	VALLEY	MT		82	101	102	105	131	133
1002	GREAT FALLS COMMUNICATIONS FACILITY SITE	CASCADE	MT	812	82	99	99	104	128	129
1002	GREAT FALLS IAP ANG	CASCADE	MT	812	82	99	99	104	128	129
1002	MALMSTROM AIR FORCE BASE	MEADE	MT	812	82	99	99	104	128	129
1005	ELLSWORTH FAMILY HOUSING ANNEX NR 2	MEADE	SD		84	99	107	108	129	139
1005	ELLSWORTH FAMILY HOUSING ANNEX NR 4	MEADE	SD		84	99	107	108	129	139
1005	ELLSWORTH AIR FORCE BASE	PENNINGTON	SD		84	99	107	108	129	139
1005	ELLSWORTH FAMILY HOUSING ANNEX NR 3	PENNINGTON	SD		84	99	107	108	129	139
1005	BISMARCK RADAR BOMB SCORING SITE	BURLEIGH	SD		84	99	107	108	129	139
1005	BADLANDS AIR FORCE RANGE	SHANNON	ND		84	99	107	108	129	139
1006	JOE FOSS FIELD ANG	SHANNON	ND		84	99	107	108	129	139
1007	BUCKLEY AIR NATIONAL GUARD BASE	MINNEHAHA	SD	A2	82	96	102	102	122	129
1007	LOWRY TRAINING ANNEX	ARAPAHOE	SD	A3	140	137	147	160	157	168
1007	BOULDER BACHELOR HSG SITE	ARAPAHOE	CO	823	140	137	147	160	157	168
1007	LONGMONT FAMILY HOUSING SITE	BOULDER	CO	823	140	137	147	160	157	168
1007	LOWRY AIR FORCE BASE	BOULDER	CO	823	140	137	147	160	157	168
1007	CREYENNE MUNICIPAL AIRPORT ANG	DENVER	CO	823	140	137	147	160	157	168
1007	FRANCIS E WARREN AIR FORCE BASE	LARAMIE	WY		140	137	147	160	157	168
1008	LINCOLN BACHELOR HSG SITE	LARAMIE	WY		140	137	147	160	157	168
1008	LINCOLN MUNICIPAL AIRPORT (ANG)	LANCASTER	NE		103	110	113	122	131	134
1009	STOIX CITY MUNICIPAL AIRPORT ANG	LANCASTER	NE		103	110	113	122	131	134
1009	OFFUTT AIR FORCE BASE	WOODBURY	IA		91	102	106	107	121	126
1009	OFFUTT FAMILY HOUSING ANNEX	SARPY	NE	822	91	102	106	107	121	126
1009	ROSECRANS MEMORIAL AIRPORT	SARPY	NE	822	91	102	106	107	121	126
1010	SCHILLING FAMILY HOUSING SITE	RUCHANAN	MO		91	102	106	107	121	126
1010	SMOKY HILL ANG RANGE	SALINE	KS	B27	123	127	126	191	198	196
1010	FORBES FIELD ANG	SALINE	KS	B27	123	127	126	191	198	196
1010	HASTINGS HOUSING SITE	SHAWNEE	KS		123	127	126	191	198	196
1010	HASTINGS RADAR BOMB SCORING SITE	ADAMS	NE	A5	123	127	126	191	198	196
1011	OLATHE FAMILY HOUSING SITE	ADAMS	NE	A5	123	127	126	191	198	196
1011	BELTON TRAINING ANNEX	JOHNSON	KS	828	87	94	97	120	131	134
1011	BELTON COMM FACILITY ANNEX	CASS	MO	828	87	94	97	120	131	134
1011	KANSAS CITY RECRUITING FAM HSG SITE	JACKSON	MO	828	87	94	97	120	131	134
1011	RICHARDS GEBAR AIR FORCE BASE	JACKSON	MO	828	87	94	97	120	131	134
1011	WHITEMAN AIR FORCE BASE	JOHNSON	MO	828	87	94	97	120	131	134

TABLE 6
AIR FORCE INSTALLATIONS BY REGION
REGION - 11

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
1102	NORAD COMBAT OPERATIONS CENTER	EL PASO	CO	AC-1	134	131	123	175	169	155
1102	PETERSON AIR FORCE BASE	EL PASO	CO	AC-1	134	131	123	175	169	155
1102	PETERSON FAMILY HOUSING ANX	EL PASO	CO	AC-1	134	131	123	175	169	155
1102	US AIR FORCE ACADEMY	EL PASO	CO	AC-1	134	131	123	175	169	155
1102	LA JUNTA RADAR BOMB SCORING SITE	OTERO	CO	AC-2	134	131	123	175	169	155
1102	LAMAR COMMUNICATIONS FACILITY ANNEX	PROMERS	CO	AC-2	134	131	123	175	169	155
1102	LAMAR FAMILY HOUSING ANX	PROMERS	CO	AC-2	134	131	123	175	169	155
1103	AIR FORCE PLANT NO 13	SEDGWICK	KS	AC-2	114	126	127	243	267	267
1103	MCCONNELL AIR FORCE BASE	SEDGWICK	KS	AC-2	114	126	127	243	267	267
1103	VANCE AIR FORCE BASE	SEDGWICK	KS	AC-2	114	126	127	243	267	267
1103	KEBELMAN AIR FORCE AUXILIARY FIELD	GARFIELD	OK	AO-2	114	126	127	243	267	267
1104	AIR FORCE PLANT NO 65	ALFALFA	OK	AO-2	83	86	87	152	156	158
1104	LITTLE ROCK AIR FORCE BASE	NEWTON	MO	AO-2	83	86	87	152	156	158
1104	FORT SMITH MUNICIPAL AIRPORT ANG	PULASKI	AR	AA-3	83	86	87	152	156	158
1104	AIR FORCE PLANT NO 3	SEBASTIAN	AR	AA-3	83	86	87	152	156	158
1104	TULSA INTERNATIONAL AIRPORT	TULSA	OK	AO-3	83	86	87	152	156	158
1105	OKLAHOMA CITY AIR FORCE STATION	TULSA	OK	AO-3	83	86	87	152	156	158
1105	OKLAHOMA CITY RECRUITING FAM HSG SITE	OKLAHOMA	OK	AO-4	122	122	124	261	260	264
1105	TINKER AIR FORCE BASE	OKLAHOMA	OK	AO-4	122	122	124	261	260	264
1105	WILL ROGERS WORLD AIRPORT	OKLAHOMA	OK	AO-4	122	122	124	261	260	264
1106	ALTUS TRAINING ANNEX	HARMON	OK	AO-5	129	136	133	180	190	195
1106	ALTUS AIR FORCE BASE	JACKSON	OK	AO-5	129	136	133	180	190	195
1106	ALTUS COMM ANNEX RECEIVER	JACKSON	OK	AO-5	129	136	133	180	190	195
1106	FREDERICK MUNICIPAL AIRPORT	TILLMAN	OK	AO-5	129	136	133	180	190	195
1106	SHEPPARD AIR FORCE BASE	WICHITA	TX	AT-1	129	136	133	180	190	195
1107	BARKSDALE AIR FORCE BASE	BOSSIER	LA	AL-1	83	84	84	133	135	134

TABLE 6

AIR FORCE INSTALLATIONS BY REGION

REGION - 12

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
1201	COMMERCE RACHELOR HSG SITE	HUNT	TX	A16 A17	85	85	90	163	163	172
1201	GREENVILLE FAMILY HOUSING ANNEX	HUNT	TX	A16 A17 R2	85	85	90	163	163	172
1201	NEDELAND ANG STATION	JEFFERSON	TX	A15 A16 A17	85	85	90	163	163	172
1202	DALLAS FT WORTH FAMILY HOUSING SITE	DALLAS	TX	A16 A17 R2	89	92	102	176	182	201
1202	GARLAND ANG STATION	DALLAS	TX	A16 A17 R2	89	92	102	176	182	201
1202	US NAVAL AIR STATION DALLAS	DALLAS	TX	A16 A17 R2	89	92	102	176	182	201
1202	AIR FORCE PLANT NO 4	TARRANT	TX	A16 A17 R2	89	92	102	176	182	201
1202	CANSMELL AIR FORCE BASE	TARRANT	TX	A16 A17 R2	89	92	102	176	182	201
1202	DALLAS RECRUITING FAM HSG SITE	TARRANT	TX	A16 A17 R2	89	92	102	176	182	201
1202	ELLINGTON AIR FORCE BASE	HARRIS	TX	A15 A16 A17	89	92	102	176	182	201
1202	HOUSTON ADM ANX	HARRIS	TX	A15 A16 A17	89	92	102	176	182	201
1202	HOUSTON FAMILY HOUSING ANX	HARRIS	TX	A15 A16 A17	89	92	102	176	182	201
1202	HOUSTON RECRUITING FAM HSG SITE	HARRIS	TX	A15 A16 A17	89	92	102	176	182	201
1202	LA PORTE ANG STATION	HARRIS	TX	A15 A16 A17	89	92	102	176	182	201
1203	CANNON AIR FORCE BASE	CURRY	TX	A15 A16 A17	89	92	102	176	182	201
1203	MELROSE AIR FORCE RANGE	ROOSEVELT	NM	A20	142	126	114	327	287	256
1203	REESE AIR FORCE BASE	LUBBOCK	TX	A16	142	126	114	327	287	256
1203	DYESS AIR FORCE BASE	TAYLOR	TX	A16	142	126	114	327	287	256
1204	WEBB AIR FORCE BASE	HOWARD	TX	A13	119	110	106	188	172	164
1204	REESE AF AUXILIARY FIELD	TERRY	TX	A16	119	110	106	188	172	164
1204	COLORADO CITY AIR FORCE AUXILIARY FIELD	MITCHELL	TX	A15 A16 A17	119	110	106	188	172	164
1204	GOODELLOW AIR FORCE BASE	TOM GREEN	TX	A16	119	110	106	188	172	164
1204	BERGSTROM AIR FORCE BASE	THAVIS	TX	A16 A17	119	110	106	188	172	164
1205	BROOKS AIR FORCE BASE	BEAR	TX	A16 A17	96	98	96	182	186	183
1205	BROOKS HOMES FAMILY HOUSING ANNEX	BEAR	TX	A16 A17	96	98	96	182	186	183
1205	KELLY AIR FORCE BASE	BEAR	TX	A16 A17	96	98	96	182	186	183
1205	LACKLAND AIR FORCE BASE	BEAR	TX	A16 A17	96	98	96	182	186	183
1205	RANDOLPH AIR FORCE BASE	BEAR	TX	A16 A17	96	98	96	182	186	183
1205	SAN ANTONIO AIR FORCE STATION	BEAR	TX	A16 A17	96	98	96	182	186	183
1205	SEGUN AIR FORCE AUXILIARY FIELD	BEAR	TX	A16 A17	96	98	96	182	186	183
1205	CASTROVILLE MUNICIPAL AIRPORT	GUADALUPE	TX	A16 A17	96	98	96	182	186	183
1205	HONDO MUNICIPAL AIRPORT	MEDINA	TX	A16 A17	96	98	96	182	186	183
1205		MEDINA	TX	A16 A17	96	98	96	182	186	183

AD-A072 554

NATIONAL DEFENSE UNIV WASHINGTON DC RESEARCH DIRECTORATE F/G 13/2
CURRENT AND PROJECTED WATER RESOURCES PROBLEMS AND THEIR IMPACT--ETC(U)
MAY 79 R D SCHWARTZ

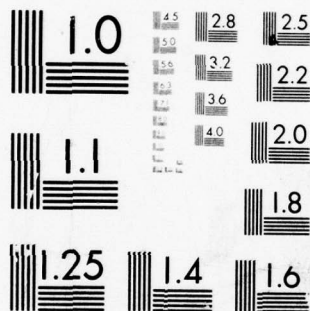
UNCLASSIFIED

3 OF 4

AD
A072 554

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

TABLE 6

AIR FORCE INSTALLATIONS BY REGION

REGION - 13

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
1302	AIR FORCE PLANT NO 83	BERNALILLO	NM	AN-1	140	153	152	165	182	180
1302	KIRTLAND AIR FORCE BASE	BERNALILLO	NM	AN-1	140	153	152	165	182	180
1302	CLOUDCROFT SATELLITE TRACKING ANNEX	OTERO	NM	AN-1	140	153	152	165	182	180
1302	HOLLOMAN AIR FORCE BASE	OTERO	NM	AN-1	140	153	152	165	182	180
1302	SACRAMENTO PEAK UPPER AIR RSCH SITE	OTERO	NM	AN-1	140	153	152	165	182	180
1304	ROSWELL FAMILY HOUSING SITE	CHAVES	NM	AN-1	144	118	124	177	143	151
1305	EAGLE PASS AUXILIARY FIELD	MAVERICK	TX	AT-4	136	139	133	180	185	177
1305	LAUGHLIN AIR FORCE BASE	VAL VERDE	TX	AT-4	136	139	133	180	185	177

REGION - 15

ASR INSTALLATION

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
1501	HOLBROOK RADAR BOMB SCORING SITE	NAVAJO	AZ	A0-1	81	95	102	102	121	129
1502	INDIAN SPRINGS AF AUXILIARY FIELD	CLARK	NV	A0-1	225	237	240	239	252	255
1502	NELLIS AIR FORCE BASE	CLARK	NV	A0-1	225	237	240	239	252	255
1502	NELLIS AIR FORCE RANGE	LINCOLN	NV	A0-1	225	237	240	239	252	255
1503	SILVER CITY RADAR SITE	GRANT	NM	A0-1	304	311	304	315	322	314
1503	AIR FORCE PLANT NO. 44	PIMA	AZ	A0-1	304	311	304	315	322	314
1503	DAVIS MONTAN AIR FORCE BASE	PIMA	AZ	A0-1	304	311	304	315	322	314
1503	SAHUARITA AIR FORCE RANGE	PIMA	AZ	A0-1	304	311	304	315	322	314
1503	TUCSON INTERNATIONAL AIRPORT	PIMA	AZ	A0-1	304	311	304	315	322	314
1503	COOLIDGE FLORENCE MUNICIPAL AIRPORT	PINAL	AZ	A0-1	304	311	304	315	322	314
1503	RITTENHOUSE AIR FORCE AUXILIARY FIELD	PINAL	AZ	A0-1	304	311	304	315	322	314
1503	GILA BEND AIR FORCE AUX FIELD	MARICOPA	AZ	A0-1	304	311	304	315	322	314
1503	LUKE AIR FORCE AUX FIELD 01	MARICOPA	AZ	A0-1	304	311	304	315	322	314
1503	LUKE AIR FORCE BASE	MARICOPA	AZ	A0-1	304	311	304	315	322	314
1503	LUKE AIR FORCE RANGE	MARICOPA	AZ	A0-1	304	311	304	315	322	314
1503	SKY HARBOR INTERNATIONAL AIRPORT	MARICOPA	AZ	A0-1	304	311	304	315	322	314
1503	WILLIAMS AIR FORCE BASE	MARICOPA	AZ	A0-1	304	311	304	315	322	314

TABLE 6
AIR FORCE INSTALLATIONS BY REGION
REGION - 16

ASR INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
1601 AIR FORCE PLANT NO 78	BOX ELDER	UT	A1	79	77	79	100	98	100
1601 AIR FORCE PLANT NO 77	DAVIS	UT	A2	79	77	79	100	98	100
1601 FRANCIS PEAK ANG STATION	DAVIS	UT	A2	79	77	79	100	98	100
1601 WILL AIR FORCE BASE	DAVIS	UT	A2	79	77	79	100	98	100
1601 SALT LAKE CITY INTERNATIONAL AIRPORT	SALT LAKE	UT	A3	79	77	79	100	98	100
1601 HILL AIR FORCE RANGE	TOOELE	UT	A3	79	77	79	100	98	100
1601 WENDOVER AIR FORCE RANGE	TOOELE	UT	A3	79	77	79	100	98	100
1604 HAWTHORNE RADAR BOMB SCORING SITE	MINERAL	NV	A9	102	101	105	165	163	170
1604 RENO INTERNATIONAL AIRPORT	WASHOE	NV	A10	102	101	105	165	163	170

TABLE 6
AIR FORCE INSTALLATIONS BY REGION
REGION - 17

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
1701	KALISPELL AIR FORCE STATION	FLATHEAD	MT		62	63	63	73	75	75
1701	KALISPELL FAMILY HOUSING ANNEX	FLATHEAD	MT		62	63	63	73	75	75
1701	FAIRCHILD AIR FORCE BASE	SPOKANE	WA		62	63	63	73	75	75
1701	FAIRCHILD AIRMAN HOUSING ANNEX	SPOKANE	WA		62	63	63	73	75	75
1701	FAIRCHILD FAMILY HOUSING ANNEX	SPOKANE	WA		62	63	63	73	75	75
1701	FAIRCHILD COMMUNICATIONS STATION	SPOKANE	WA		62	63	63	73	75	75
1701	FOUR LAKES COMMUNICATIONS STATION	SPOKANE	WA		62	63	63	73	75	75
1701	MICA PEAK AIR FORCE STATION	SPOKANE	WA		62	63	63	73	75	75
1701	SPOKANE AIR FORCE ANNEX	SPOKANE	WA		62	63	63	73	75	75
1701	SPOKANE INTERNATIONAL AIRPORT	SPOKANE	WA		62	63	63	73	75	75
1701	SPOKANE INTERNATIONAL APT ANG	SPOKANE	WA		62	63	63	73	75	75
1701	SPOKANE INTERNATIONAL (GOWEN FIELD)	ADA	WA		62	63	63	73	75	75
1703	BOISE AIR TERMINAL (GOWEN FIELD)	ADA	ID	A3	91	96	95	119	127	125
1703	WILDER RADAR BOMB SCORING SITE	CANYON	ID	A3	91	96	95	119	127	125
1703	MOUNTAIN HOME AIR FORCE BASE	ELMORE	ID	A3	91	96	95	119	127	125
1703	SAYLOR CREEK AIR FORCE RANGE	ONYHEE	ID	A3	91	96	95	119	127	125
1705	MOUNT HERD AIR FORCE STATION	YAMHILL	OR		85	86	86	102	104	104
1705	PORTLAND BACHELOR HSG SITE	MULTNOMAH	OR	A4	85	86	86	102	104	104
1705	PORTLAND INTERNATIONAL AIRPORT	MULTNOMAH	OR	A4	85	86	86	102	104	104
1705	NORTH BEND AIR FORCE STATION	COOS	OR	A1	85	86	86	102	104	104
1705	NORTH BEND COMMUNICATION FACILITY ANNEX	COOS	OR	A1	85	86	86	102	104	104
1705	NORTH BEND FAMILY HOUSING ANNEX	COOS	OR	A1	85	86	86	102	104	104
1705	MOUNT HERD FAMILY HOUSING ANNEX	TILLAMOOK	OR	A1	85	86	86	102	104	104
1706	MAKAM AIR FORCE STATION	CLALLAM	WA	A2	81	82	82	96	96	96
1706	DES MOINES FAMILY HOUSING ANNEX	KING	WA	A2	81	82	82	96	96	96
1706	FEDERAL WAY FAMILY HOUSING ANNEX	KING	WA	A2	81	82	82	96	96	96
1706	MOUNT LAKE TERRACE FAMILY HOUSING SITE	KING	WA	A2	81	82	82	96	96	96
1706	RENTON FAMILY HOUSING ANNEX	KING	WA	A2	81	82	82	96	96	96
1706	SEATTLE ADMIN ANNEX	KING	WA	A2	81	82	82	96	96	96
1706	SEATTLE AIR NATIONAL GUARD BASE	KING	WA	A2	81	82	82	96	96	96
1706	SEATTLE FAMILY HOUSING ANNEX	KING	WA	A2	81	82	82	96	96	96
1706	SEATTLE RECRUITING FAM HSG SITE	KITSAP	WA	A2	81	82	82	96	96	96
1706	MCHORD AIR FORCE BASE	PIERCE	WA	A2	81	82	82	96	96	96
1706	PAINE FIELD ANG STATION	SHOMONISH	WA	A2	81	82	82	96	96	96
1706	BELLINGHAM MUNICIPAL AIRPORT ANG	WHATCOM	WA	A2	81	82	82	96	96	96
1706	BLAINE AIR FORCE STATION	WHATCOM	WA	A2	81	82	82	96	96	96
1706	BLAINE FAMILY HOUSING ANNEX	WHATCOM	WA	A2	81	82	82	96	96	96

TABLE 6
AIR FORCE INSTALLATIONS BY REGION
REGION - 18

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
1801	KLAMATH AIR FORCE STATION	DEL NORTE	CA		65	66	66	95	96	96
1801	POINT ARENA AIR FORCE STATION	MENDOCINO	CA		65	66	66	95	96	96
1801	KENO AIR FORCE STATION	KLAMATH	OR		65	66	66	95	96	96
1801	KINGSLEY FAMILY HOUSING ANNEX	KLAMATH	OR		65	66	66	95	96	96
1801	KINGSLEY FIELD	KLAMATH	OR		65	66	66	95	96	96
1801	KINGSLEY FIRING RANGE ANNEX	KLAMATH	OR		65	66	66	95	96	96
1801	CHICO RESEARCH SITE	BUTTE	CA	A021	65	66	66	95	96	96
1802	MCLELLAN ADMINISTRATIVE ANNEX	BUTTE	CA	A021	76	88	97	106	122	134
1802	LINCOLN COMMUNICATIONS ANNEX	PLACER	CA	A021	76	88	97	106	122	134
1802	MATHER AIR FORCE BASE	SACRAMENTO	CA	A021	76	88	97	106	122	134
1802	MCLELLAN AIR FORCE BASE	SACRAMENTO	CA	A021	76	88	97	106	122	134
1802	MCLELLAN FAMILY HOUSING ANNEX	SACRAMENTO	CA	A021	76	88	97	106	122	134
1802	MCLELLAN STORAGE ANNEX	SACRAMENTO	CA	A021	76	88	97	106	122	134
1802	NORTH HIGHLANDS AIR NATIONAL GUARD	SACRAMENTO	CA	A021	76	88	97	106	122	134
1802	BEALE AIR FORCE BASE	YUBA	CA	A021	76	88	97	106	122	134
1802	FRESNO ANG BASE	FRESNO	CA	A031	109	114	123	131	137	148
1803	EDWARDS AIR FORCE BASE	KERN	CA		109	114	123	131	137	148
1803	CASTLE AIR FORCE BASE	MERCED	CA	A031	109	114	123	131	137	148
1803	CASTLE FAMILY HOUSING ANNEX NO 3	MERCED	CA	A031	109	114	123	131	137	148
1803	CASTLE HOUSING ANNEX NO 2	MERCED	CA	A031	109	114	123	131	137	148
1804	CAMP PARKS COMMUNICATIONS ANNEX	ALAMEDA	CA	A042	91	96	100	152	161	168
1804	FREMONT FAMILY HOUSING SITE	ALAMEDA	CA	A042	91	96	100	152	161	168
1804	HAYWARD MUNICIPAL AIRPORT ANG	ALAMEDA	CA	A042	91	96	100	152	161	168
1804	MILL VALLEY AIR FORCE STATION	MARTIN	CA	A042	91	96	100	152	161	168
1804	PILLAR POINT MISSILE TRACKING SITE NO 1	MARTIN	CA	A042	91	96	100	152	161	168
1804	ALHADDEN AIR FORCE STATION	SANTA CLARA	CA		91	96	100	152	161	168
1804	ALHADDEN COMMUNICATIONS FACILITY ANNEX	SANTA CLARA	CA		91	96	100	152	161	168
1804	ALHADDEN FAMILY HOUSING ANNEX	SANTA CLARA	CA		91	96	100	152	161	168
1804	SUNNYVALE AIR FORCE STATION	SANTA CLARA	CA	B091	91	96	100	152	161	168
1804	SUNNYVALE FAMILY HOUSING SITE	SANTA CLARA	CA	B091	91	96	100	152	161	168
1804	TRAVIS AIR FORCE BASE	SOLANO	CA	B092	91	96	100	152	161	168
1804	CAMBRIA AIR FORCE STATION	SAN LUIS OBISPO	CA		83	91	94	169	184	192
1805	CAMBRIA FAMILY HOUSING ANNEX	SAN LUIS OBISPO	CA		83	91	94	169	184	192
1805	VANDENBERG AIR FORCE BASE	SANTA BARBARA	CA		83	91	94	169	184	192
1805	CARSON FAMILY HOUSING SITE	LOS ANGELES	CA	B062	107	97	96	116	105	105
1806	COMPTON ANG STATION	LOS ANGELES	CA	B062	107	97	96	116	105	105
1806	LOS ANGELES AFOTC FAMILY HOUSING SITE	LOS ANGELES	CA	B062	107	97	96	116	105	105
1806	LOS ANGELES AIR FORCE ANNEX NR 1	LOS ANGELES	CA	B062	107	97	96	116	105	105
1806	LOS ANGELES AIR FORCE STATION	LOS ANGELES	CA	B062	107	97	96	116	105	105
1806	LOS ANGELES BACHELOR HSG SITE	LOS ANGELES	CA	B062	107	97	96	116	105	105
1806	LOS ANGELES RECRUITING FAM HSG SITE	LOS ANGELES	CA	B062	107	97	96	116	105	105
1806	PRODUCTION FLIGHT TEST INSTL AF PLT 42	LOS ANGELES	CA	B062	107	97	96	116	105	105
1806	SAN PEDRO HILL AIR FORCE STATION	LOS ANGELES	CA	B062	107	97	96	116	105	105
1806	SAN PEDRO HILL FAMILY HOUSING ANNEX	LOS ANGELES	CA	B062	107	97	96	116	105	105
1806	SEPUVEDA AIR NATIONAL GUARD STATION	LOS ANGELES	CA	B062	107	97	96	116	105	105
1806	VAN NUYS AIRPORT ANG	LOS ANGELES	CA	B062	107	97	96	116	105	105

TABLE 6
AIR FORCE INSTALLATIONS BY REGION
REGION - 18

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
1806	VAN NUYS FAMILY HOUSING SITE	LOS ANGELES	CA	8062	107	97	96	116	105	105
1806	MARCH AIR FORCE BASE	RIVERSIDE	CA	8061 8062	107	97	96	116	105	105
1806	MARCH COMMUNICATIONS ANNEX NO 2	RIVERSIDE	CA	8061 8062	107	97	96	116	105	105
1806	MARCH COMMUNICATIONS FACILITY ANNEX	RIVERSIDE	CA	8061 8062	107	97	96	116	105	105
1806	CUDEBACK DRY LAKE TEST ANNEX	SAN BERNARDINO	CA		107	97	96	116	105	105
1806	GEORGE AIR FORCE BASE	SAN BERNARDINO	CA		107	97	96	116	105	105
1806	NORTON AIR FORCE BASE	SAN BERNARDINO	CA	8061 8062	107	97	96	116	105	105
1806	NORTON COMMUNICATIONS FACILITY ANNEX	SAN BERNARDINO	CA	8061 8062	107	97	96	116	105	105
1806	ONTARIO INTERNATIONAL AIRPORT ANG	SAN BERNARDINO	CA	8061 8062	107	97	96	116	105	105
1806	AIR FORCE PLANT NO 19	SAN DIEGO	CA	8062 8063	107	97	96	116	105	105
1806	MT LAGUNA AIR FORCE STATION	SAN DIEGO	CA	8062 8063	107	97	96	116	105	105
1806	MT LAGUNA FAMILY HOUSING ANX	SAN DIEGO	CA	8062 8063	107	97	96	116	105	105
1807	COYOTE FLATS AIR STRIP	INYO	CA		110	110	111	142	141	143

TABLE 6
AIR FORCE INSTALLATIONS BY REGION
REGION - 19

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
1901	CAPE LISBURN AIR FORCE STATION	BARROW	AK	A3	95	95	95	108	108	108
1901	POINT BARROW DEM STATION	BARROW	AK	A3	95	95	95	108	108	108
1901	KOTZEBUE AIR FORCE STATION	BARROW	AK	A3	95	95	95	108	108	108
1901	TIN CITY AIR FORCE STATION	KOROK	AK	B9	95	95	95	108	108	108
1901	BLAIR LAKE AIR FORCE RANGE	NOME	AK	A1	95	95	95	108	108	108
1901	CLEAR MISSILE EARLY WARNING STATION	FAIRBANKS	AK	A1	95	95	95	108	108	108
1901	EIELSON AIR FORCE BASE	FAIRBANKS	AK	A1	95	95	95	108	108	108
1901	MURPHY DOME AIR FORCE STATION	FAIRBANKS	AK	A1	95	95	95	108	108	108
1901	TATALINA AIR FORCE STATION	KUSKOWIM	AK	B15	95	95	95	108	108	108
1901	BARTER ISLAND DEM STATION	UPPER YUKON	AK	A3	95	95	95	108	108	108
1901	FORT YUKON AIR FORCE STATION	UPPER YUKON	AK	B11	95	95	95	108	108	108
1901	CAPE ROMANZOF AIR FORCE STATION	WADE HAMPTON	AK	B14	95	95	95	108	108	108
1901	GALENA AIRPORT	YUKON KOTUKUK	AK	B12	95	95	95	108	108	108
1901	INDIAN MOUNTAIN AIR FORCE STATION	YUKON KOTUKUK	AK	B12	95	95	95	108	108	108
1901	CAMPION AIR FORCE STATION	YUKON-KOTUKUK	AK	B12	95	95	95	108	108	108
1901	KING SALMON AIRPORT	YUKON-KOTUKUK	AK	B16	95	95	95	108	108	108
1901	COLD BAY AIR FORCE STATION	YUKON-KOTUKUK	AK	B16	95	95	95	108	108	108
1901	SHENYA AIR FORCE BASE	ALUTIAN ISLANDS	AK	B16	95	95	95	108	108	108
1901	CAPE NEMENHAM AIR FORCE STATION	BETHEL	AK	B15	95	95	95	108	108	108
1901	SPARREVOHN AIR FORCE STATION	BRISTOL BAY	AK	A2	95	95	95	108	108	108
1901	ACHORAGE IAP ADMIN ANNEX	ANCHORAGE	AK	A5	95	95	95	108	108	108
1901	ELMENDORF AIR FORCE BASE	ANCHORAGE	AK	A5	95	95	95	108	108	108
1901	KULIS ANG BASE	ANCHORAGE	AK	A5	95	95	95	108	108	108

A-129

REGION - 20

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
2003	BELLOWS AIR FORCE STATION	HONOLULU	HI	B6-2	80	82	85	111	113	118
2003	HICKAM AIR FORCE BASE	HONOLULU	HI	B6-4	80	82	85	111	113	118
2003	KAALA AIR FORCE STATION	HONOLULU	HI	B6-6	80	82	85	111	113	118
2003	KAENA POINT SATELLITE TRACKING STATION	HONOLULU	HI	B6-5	80	82	85	111	113	118
2003	KUNIA COMMUNICATION	HONOLULU	HI	B6-6	80	82	85	111	113	118
2003	PALEHUA AF SOLAR OBSERVATORY RSCH SITE	HONOLULU	HI	B6-3	80	82	85	111	113	118
2003	PUNAMANO AIR FORCE STATION	HONOLULU	HI	B6-1	80	82	85	111	113	118
2003	MAHIANA COMMUNICATION STATION	HONOLULU	HI	B6-6	80	82	85	111	113	118
2003	WHEELER AIR FORCE BASE	HONOLULU	HI	B6-4	80	82	85	111	113	118
2004	KOKEE AIR FORCE STATION	KAUAI	HI	B7-5	77	77	77	105	105	108

TABLE 7. NAVY AND MARINE INSTALLATIONS BY REGION

This table provides a list of the Navy and Marine installations from Table 3, grouping them by water resource region and by aggregated subregion. Data shown in the columns are described below.

ASR -- Aggregated Subregion in which the installation is located.

COUNTY -- Name of the county in which the installation is located.

ST -- State in which the installation is located.

PROBLEMS -- Specifically identified water and land-related resource problems for the area in which the installation is located. The alpha prefix identifies the category of problem (A--a severe problem identified but not yet under study, and B--a severe problem already under study). An abbreviated description of the problem may be found in Appendix B by noting the region and problem numbers for the installation in this table. Example: Communication Unit Cutler in Region 1 with Problem Number A2. Turning to Appendix B, find Region 1 and Problem Number A2. (In Appendix B, Category A problems are listed first in numerical order, followed by Category B problems in numerical order.) Where a second alpha indicator appears, it is the first letter in the state where the installation is located. All problem numbers are the same as those found in the Second National Water Assessment in order to facilitate reference to them.

75 85 00 75 85 00 -- These are projections for the years 1975, 1985, and 2000. The first set is for an average year and the second set is for a dry year (see text for definitions of average year and dry year). The projections are a ratio of requirements/supply for the entire ASR in which the installation is located. The projections should only be used as indicators of a general condition and not as specific indicators of available water in the vicinity of the installation. Each projection was derived by the Water Resources Council by taking the projected water requirements for one year in the ASR and dividing them by the projected water supply available for one year in the ASR.

TABLE 7
NAVY AND MARINE INSTALLATIONS BY REGION
REGION - 1

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
101	COMMUNICATION UNIT CUTLER	WASHINGTON	ME	A2	88	88	89	107	107	108
101	SECURITY GROUP ACTIVITY WINTER HARBOR	HANCOCK	ME	A2	88	88	89	107	107	108
101	NAVAL AIR STA PHIPPSBURG	SAGadahoc	ME	A4	88	88	89	107	107	108
102	AIR STATION BRUNSWICK	CUMBERLAND	ME	A4	89	89	90	112	113	113
102	REGIONAL MEDICAL CLINIC PORTSMOUTH	ROCKINGHAM	NH	A9	89	89	90	112	113	113
102	SHIPYARD PORTSMOUTH	ROCKINGHAM	NH	A9	89	89	90	112	113	113
103	NAVAL FACILITY NANTUCKET	NANTUCKET	MA	B11	88	89	90	105	106	108
103	AIR STATION SOUTH WEYMOUTH	PLYMOUTH	MA	B11	88	89	90	105	106	108
103	EDUCATION & TRAINING CTR NEWPORT	NEWPORT	RI	B12	88	89	90	105	106	108
103	REGIONAL MEDICAL CENTER NEWPORT	NEWPORT	RI	B12	88	89	90	105	106	108
103	SCOL/MAR COLLEGE NEWPORT	NEWPORT	RI	B12	88	89	90	105	106	108
103	UNDERWATER SYSTEMS CENTER NEWPORT	NEWPORT	RI	B12	88	89	90	105	106	108
103	CONSTRUCTION BATTALN CTR DAVISVILLE	WASHINGTON	RI	B12	88	89	90	105	106	108
104	SUBMARINE BASE NEW LONDON	NEW LONDON	CT	A19	89	89	90	116	117	118
104	UNDERWATER SYS CTR NEW LONDON LAB	NEW LONDON	CT	A19	89	89	90	116	117	118

TABLE 7
NAVY AND MARINE INSTALLATIONS BY REGION
REGION - 2

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
202	WEAPONS STATION EARLE	HONMOUTH	NJ	811	90	91	92	120	121	123
202	SUPPORT ACT BROOKLYN	KINGS	NY	86	90	91	92	120	121	123
202	SUPPORT ACT NYSD AREA	KINGS	NY	86	90	91	92	120	121	123
202	SUPPORT ACTIVITY MITCHELL FIELD	NASSAU	NY	84	90	91	92	120	121	123
202	CLINIC BRANCH ST ALBANS	QUEENS	NY	86	90	91	92	120	121	123
202	UNDERMATER SYS CTR FISHERS IS	SUFFOLK	NY	84	90	91	92	120	121	123
203	TRAINING CENTER BAINBRIDGE	CECIL	MD	819	89	90	91	113	114	116
203	AIR PROPULSION TEST CTR TRENTON	MERCER	NJ	810	89	90	91	113	114	116
203	AIR ENGINEERING CENTER LAKEHURST	OCEAN	NJ	810	89	90	91	113	114	116
203	AIR DEVELOPMENT CTR WARMINSTER	BUCKS	PA	810	89	90	91	113	114	116
203	AIR STATION WILLOW GROVE	MONTGOMERY	PA	810	89	90	91	113	114	116
203	AVIATION SUPPLY OFFICE PHILADELPHIA	PHILADELPHIA	PA	810	89	90	91	113	114	116
203	REGIONAL MEDICAL CENTER PHILADELPHIA	PHILADELPHIA	PA	810	89	90	91	113	114	116
203	SHIPYARD PHILADELPHIA	PHILADELPHIA	PA	810	89	90	91	113	114	116
203	SUPPORT ACT PHILADELPHIA	PHILADELPHIA	PA	810	89	90	91	113	114	116
204	SHIPS PARTS CONTROL CTR MECHANICSBURG	CUMBERLAND	PA	817	87	87	88	107	108	109
205	NAVAL FACILITY LEWES	SUSSEX	DE	819	85	86	87	111	113	115
205	NAVAL HOSPITAL ANNAPOLIS	ANNE ARUNDEL	MD	818	85	86	87	111	113	115
205	NAVAL STATION ANNAPOLIS	ANNE ARUNDEL	MD	818	85	86	87	111	113	115
205	SCOL/ACADEMY ANNAPOLIS	ANNE ARUNDEL	MD	818	85	86	87	111	113	115
205	SHIP RESCUE/DEVT CTR ANNAPOLIS DIV	ANNE ARUNDEL	MD	818	85	86	87	111	113	115
205	SURFACE WEAPONS CENTER SOLOMONS	CALVERT	MD	818	85	86	87	111	113	115
205	NAVAL AIR STA TANGIER IS	ACCOMACK	VA	819	85	86	87	111	113	115
205	NAVAL AIR STA ALF FENTRESS	CHESAPEAKE	VA	827	85	86	87	111	113	115
205	ADMIN CMD ARM FOR STAFF COLLEGE	NORFOLK	VA	827	85	86	87	111	113	115
205	AMPHIBIOUS BASE NORFOLK	NORFOLK	VA	827	85	86	87	111	113	115
205	COMH AREA MASTER STATION NORFOLK	NORFOLK	VA	827	85	86	87	111	113	115
205	FLT ASM TRNG CTR NORFOLK	NORFOLK	VA	827	85	86	87	111	113	115
205	MARCORPS CAMP ELMORE DET	NORFOLK	VA	827	85	86	87	111	113	115
205	NAVAL AIR STATION NORFOLK	NORFOLK	VA	827	85	86	87	111	113	115
205	NAVAL STATION NORFOLK	NORFOLK	VA	827	85	86	87	111	113	115
205	PUBLIC WORKS CTR NORFOLK	NORFOLK	VA	827	85	86	87	111	113	115
205	REGIONAL MED CTR PORTSMOUTH	NORFOLK	VA	827	85	86	87	111	113	115
205	SHIPYARD NORFOLK	NORFOLK	VA	827	85	86	87	111	113	115
205	SUPPLY CTR NORFOLK	NORFOLK	VA	827	85	86	87	111	113	115
205	FLT COMBAT TRNG CTR ATLANTIC	NORFOLK	VA	827	85	86	87	111	113	115
205	NAVAL AIR STATION VIRGINIA BEACH	VIRGINIA BEACH	VA	827	85	86	87	111	113	115
205	WEAPONS STATION YORKTOWN	YORK	VA	827	85	86	87	111	113	115
206	COMMUNICATION UNIT CHELTENHAM	DIST OF COL	DC	822	84	85	87	113	114	117
206	DISTRICT COMMANDANT	DIST OF COL	DC	822	84	85	87	113	114	117
206	MARCORPS BARRACKS WASHINGTON	DIST OF COL	DC	822	84	85	87	113	114	117
206	NAVAL OBSERVATORY	DIST OF COL	DC	822	84	85	87	113	114	117
206	RESEARCH LABORATORY	DIST OF COL	DC	822	84	85	87	113	114	117
206	SECURITY STATION	DIST OF COL	DC	822	84	85	87	113	114	117
206	ORDNANCE STATION INDIAN HEAD	CHARLES	MD	822	84	85	87	113	114	117
206	ORDNANCE STATION STUMP NECK	CHARLES	MD	822	84	85	87	113	114	117

TABLE 7

NAVY AND MARINE INSTALLATIONS BY REGION

REGION - 2

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
206	REGIONAL MEDICAL CENTER BETHESDA	MONTGOMERY	MD	822	84	85	87	113	114	117
206	SHIP RESEARCH & DEVT CTR HETHESDA	MONTGOMERY	MD	822	84	85	87	113	114	117
206	SURFACE WEAPONS CENTER WHITE OAK	MONTGOMERY	MD	822	84	85	87	113	114	117
206	AIR TEST CENTER PATUXENT RIVER	ST MARYS	MD	822	84	85	87	113	114	117
206	AIR TEST CTR RAY FOREST TRKG SITE	ST MARYS	MD	822	84	85	87	113	114	117
206	AIR TEST CTR BLOODSNORTH IS	ST MARYS	MD	822	84	85	87	113	114	117
206	AIR TEST CTR CHESAPEAKE TRKG SITE	ST MARYS	MD	822	84	85	87	113	114	117
206	AIR TEST CTR POINT LOOKOUT TRKG SITE	ST MARYS	MD	822	84	85	87	113	114	117
206	AIR TEST CTR POINT NO POINT TRKG SITE	ST MARYS	MD	822	84	85	87	113	114	117
206	MARCORPS HDQTRS HENDERSON HALL	ARLINGTON	VA	822	84	85	87	113	114	117
206	SURFACE WEAPONS CENTER DAHLGREN	KING GEORGE	VA	822	84	85	87	113	114	117
206	HOSPITAL QUANTICO	PRINCE WILLIAM	VA	822	84	85	87	113	114	117
206	MARCORPS AIR STATION QUANTICO	PRINCE WILLIAM	VA	822	84	85	87	113	114	117
206	MARCORPS DEV & EDUCN CMD QUANTICO	PRINCE WILLIAM	VA	822	84	85	87	113	114	117

TABLE 7

NAVY AND MARINE INSTALLATIONS BY REGION

REGION - 3

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
301	NAVAL FACILITY CAPE HATTERAS	DARE	NC	A301B	72	73	75	99	100	102
301	NAVAL AIR STA PALMETTO PT	TYRRELL	NC	A301B	72	73	75	99	100	102
301	MARCORPS AUX LAND FIELD BOGUE	CARTERET	NC	A302	72	73	75	99	100	102
301	MARCORPS OUTLYING FIELD ATLANTIC	CARTERET	NC	A302	72	73	75	99	100	102
301	MARCORPS AIR STATION CHERRY POINT	CRAVEN	NC	A302	72	73	75	99	100	102
301	MARCORPS AIR STA NEW HANOVER	NEW HANOVER	NC	A303	72	73	75	99	100	102
301	MARCORPS AIR FIELD OAK GROVE	ONSLOW	NC	A303	72	73	75	99	100	102
301	MARCORPS AIR STA NEW RIVER	ONSLOW	NC	A303	72	73	75	99	100	102
301	MARCORPS BASE CAMP LEJEUNE	ONSLOW	NC	A303	72	73	75	99	100	102
301	REGIONAL MEDICAL CENTER CAMP LEJEUNE	ONSLOW	NC	A303	72	73	75	99	100	102
302	MARCORPS AIR STATION BEAUFORT	BEAUFORT	SC	A305B	81	82	84	115	117	120
302	MARCORPS RECRUIT DEPOT PARRIS ISLAND	BEAUFORT	SC	A305B	81	82	84	115	117	120
302	NAVAL HOSPITAL BEAUFORT	BEAUFORT	SC	A305B	81	82	84	115	117	120
302	WEAPONS STATION CHARLESTON	BERKELEY	SC	A305B	81	82	84	115	117	120
302	FLT RAL MIS SUB TRNG CTR CHARLESTON	CHARLESTON	SC	A305B	81	82	84	115	117	120
302	FLT MINE WARFARE TRNG CTR CHARLESTON	CHARLESTON	SC	A305B	81	82	84	115	117	120
302	NAVAL STATION CHARLESTON	CHARLESTON	SC	A305B	81	82	84	115	117	120
302	REGIONAL MEDICAL CENTER CHARLESTON	CHARLESTON	SC	A305B	81	82	84	115	117	120
302	SHIPYARD CHARLESTON	CHARLESTON	SC	A305B	81	82	84	115	117	120
302	SUPPLY CENTER CHICORA TANK FARM	CHARLESTON	SC	A305B	81	82	84	115	117	120
303	SCOL/SUPPLY CORPS ATHENS	CLARKE	GA	A307	77	78	79	112	113	115
304	NAVAL AIR STA STEVENS LAKE TARGET	CLAY	FL	A308	83	84	86	143	146	149
304	NAVAL AIR STA OLF WHITEHOUSE	DUVAL	FL	A308	83	84	86	143	146	149
304	NAVAL AIR STATION CECIL FIELD	DUVAL	FL	A308	83	84	86	143	146	149
304	NAVAL AIR STATION JACKSONVILLE	DUVAL	FL	A308	83	84	86	143	146	149
304	NAVAL STATION MAYPORT	DUVAL	FL	A308	83	84	86	143	146	149
304	REGIONAL MEDICAL CENTER JACKSONVILLE	DUVAL	FL	A308	83	84	86	143	146	149
304	NAVAL AIR STATION PINECASTLE RANGE	MARION	FL	A308	83	84	86	143	146	149
304	REGIONAL MEDICAL CENTER ORLANDO	ORANGE	FL	A308	83	84	86	143	146	149
304	TRAINING CENTER ORLANDO	ORANGE	FL	A308	83	84	86	143	146	149
304	NAVAL AIR STA PUTNAM TARGET	PUTNAM	FL	A308	83	84	86	143	146	149
304	NAVAL AIR STA RODMAN TARGET	PUTNAM	FL	A308	83	84	86	143	146	149
304	NAVAL AIR STA LAKE GEORGE TARGET	VOLUSTA	FL	A308	83	84	86	143	146	149
305	SECURITY GROUP ACT HOMESTEAD	DADE	FL	A309	93	97	103	149	155	165
305	NAVAL AIR STA MARGUESAS KEYS	MONROE	FL	A309	93	97	103	149	155	165
305	NAVAL AIR STATION KEY WEST	MONROE	FL	A309	93	97	103	149	155	165
305	NAVAL HOSPITAL KEY WEST	MONROE	FL	A309	93	97	103	149	155	165
306	NAVAL AIR STATION ATLANTA	COBB	GA	A312	87	88	89	114	115	117
306	MARCORPS LOGISTICS SUPPORT ACT ALBANY	DOUGHERTY	GA	A312	87	88	89	114	115	117
307	NAVAL AIR STA OLF MIDDLETON	CONECUH	AL	A314	89	90	91	113	113	115
307	NAVAL AIR STA OLF BREWTON	ESCAMBIA	AL	A314	89	90	91	113	113	115
307	COASTAL SYSTEMS LAB PANAMA CITY	RAY	FL	A314	89	90	91	113	113	115
307	AEROSPACE & REG MED CTR PENSACOLA	ESCAMBIA	FL	A314	89	90	91	113	113	115
307	AIR STATION SAUFLEY FIELD	ESCAMBIA	FL	A314	89	90	91	113	113	115
307	NAVAL AIR STA OLF 4A	ESCAMBIA	FL	A314	89	90	91	113	113	115
307	NAVAL AIR STA OLF 8A	ESCAMBIA	FL	A314	89	90	91	113	113	115

TABLE 7

NAVY AND MARINE INSTALLATIONS BY REGION

REGION - 3

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00
307	NAVAL AIR STA OLF BRONSON	ESCAMBRIA	FL	A314	89	90	91
307	NAVAL AIR STA OLF SITE 6	ESCAMBRIA	FL	A314	89	90	91
307	NAVAL AIR STATION PENSACOLA	ESCAMBRIA	FL	A314	89	90	91
307	PUBLIC WORKS CTR PENSACOLA	ESCAMBRIA	FL	A314	89	90	91
307	TECHNICAL TRNG CTR CORRY STA	ESCAMBRIA	FL	A314	89	90	91
307	NAVAL AIR STA OLF CHOCTAW	SANTA ROSA	FL	A314	89	90	91
307	NAVAL AIR STA OLF HOLLY	SANTA ROSA	FL	A314	89	90	91
307	NAVAL AIR STA OLF SANTA	SANTA ROSA	FL	A314	89	90	91
307	NAVAL AIR STA OLF SITE 2	SANTA ROSA	FL	A314	89	90	91
307	NAVAL AIR STA OLF SPENCER	SANTA ROSA	FL	A314	89	90	91
307	NAVAL AIR STATION OLF SITE 1	SANTA ROSA	FL	A314	89	90	91
307	NAVAL AIR STATION WHITING FIELD	SANTA ROSA	FL	A314	89	90	91
308	NAVAL AIR STA OLF BARIN	BALDWIN	AL	A316C	86	87	87
308	NAVAL AIR STA OLF FAIRCLOTH	BALDWIN	AL	A316C	86	87	87
308	NAVAL AIR STA OLF KAISER	BALDWIN	AL	A316C	86	87	87
308	NAVAL AIR STA OLF KINGS	BALDWIN	AL	A316C	86	87	87
308	NAVAL AIR STA OLF MAGNOLIA	BALDWIN	AL	A316C	86	87	87
308	NAVAL AIR STA OLF SILVER HILL	BALDWIN	AL	A316C	86	87	87
308	NAVAL AIR STA OLF SUMMERDALE	BALDWIN	AL	A316C	86	87	87
308	NAVAL AIR STA OLF WOLFE	BALDWIN	AL	A316C	86	87	87
308	NAVAL AIR STA OLF BRAVO	KEMPER	MS	A316A	86	87	87
308	NAVAL AIR STATION OLF ALPHA	NOXUBEE	MS	A316A	86	87	87
309	CONST BATTALN CTR DE SOTO NATL FOREST	HARRISON	MS	A317	82	82	82
309	NAVAL HOME	HARRISON	MS	A317	82	82	82
309	AIR STATION MERIDIAN	LAUDERDALE	MS	A317	82	82	82

REGION - 4

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00
403	AIR STATION GLENVIEW	COOK	IL	A9	80	92	112
403	PUBLIC WORKS CTR GREAT LAKES	LAKE	IL	A9	80	92	112
403	REGIONAL MEDICAL CENTER GREAT LAKES	LAKE	IL	A9	80	92	112
403	TRAINING CENTER GREAT LAKES	LAKE	IL	A9	80	92	112
407	FINANCE CENTER CLEVELAND	CUYAHOGA	OH	A20	83	83	84
408	UNDERWATER SYS CTR LAKE SENeca	YATES	NY	A26	92	92	93

TABLE 7
NAVY AND MARINE INSTALLATIONS BY REGION
REGION - 5

ASR INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
505 ORDNANCE STATION LOUISVILLE	JEFFERSON	KY	A15	90	91	92	113	114	116
506 AVIONICS FACILITY INDIANAPOLIS	MARION	IN	A14	74	75	76	111	111	114
506 WEAPONS SUPPORT CENTER CRANE	MARTIN	IN	A14	74	75	76	111	111	114
506 WEAPONS SUPPORT CENTER BLOOMINGTON	MONROE	IN	A14	74	75	76	111	111	114
506 WEAPONS SUPPORT CENTER DUGGER	SULLIVAN	IN	A14	74	75	76	111	111	114

REGION - 8

ASR INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
801 AIR STATION MEMPHIS	SHELBY	TN	A1-7	85	87	88	129	132	134
801 REGIONAL MEDICAL CENTER MEMPHIS	SHELBY	TN	A1-7	85	87	88	129	132	134
803 SUPPORT ACT NEW ORLEANS	ORLEANS	LA	A3-1	86	87	89	129	132	134
803 NAVAL AIR STATION NEW ORLEANS	PLAQUEMINES	LA	A3-1	86	87	89	129	132	134

REGION - 11

ASR INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
1105 AMMUNITION DEPOT MCALESTER	PITTSBURG	OK	AO-4	122	122	124	261	260	264

REGION - 12

ASR INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
1202 NAVAL AIR STATION DALLAS	DALLAS	TX	A16 A17	89	92	102	176	182	201
1205 NAVAL AIR STATION CHASE FIELD	BEE	TX	A16 A17	96	98	96	182	186	183
1205 NAVAL AIR STA ALF GOLIAD	GOLIAD	TX	A16 A17	96	98	96	182	186	183
1205 NAVAL AIR STA ALF ORANGE	JIM WELLS	TX	A16 A17	96	98	96	182	186	183
1205 NAVAL AIR STATION KINGSVILLE	KLEBERG	TX	A16 A17	96	98	96	182	186	183
1205 NAVAL AIR STA ALF CABANISS NUECES	NUECES	TX	A15 A16	96	98	96	182	186	183
1205 NAVAL AIR STATION ALF WALDRON	NUECES	TX	A15 A16	96	98	96	182	186	183
1205 NAVAL AIR STATION CORPUS CHRISTI	NUECES	TX	A15 A16	96	98	96	182	186	183
1205 NAVAL AIR STATION PERRY PLACE	NUECES	TX	A15 A16	96	98	96	182	186	183
1205 REGIONAL MEDICAL CENTER CORPUS CHRISTI	NUECES	TX	A15 A16	96	98	96	182	186	183

TABLE 7

NAVY AND MARINE INSTALLATIONS BY REGION

REGION - 15

ASR INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
1502 MARCORPS AIR STATION YUMA	YUMA	AZ	A0-1 A0-2 A2-5	225	237	240	239	252	255
1503 ELECTRONICS LAB ARIZONA FACILITY	MARICOPA	AZ	A0-1 A0-2 A3-4	304	311	304	315	322	314

REGION - 16

ASR INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
1604 AIR STATION FALLON	CHURCHILL	NV	A9 A10	102	101	105	165	163	170
1604 AIR STATION TARGET 17	CHURCHILL	NV	A9 A10	102	101	105	165	163	170
1604 AIR STATION TARGET 19	CHURCHILL	NV	A9 A10	102	101	105	165	163	170
1604 AIR STATION TARGET 21	CHURCHILL	NV	A9 A10	102	101	105	165	163	170
1604 AIR STATION TARGET 816	CHURCHILL	NV	A9 A10	102	101	105	165	163	170
1604 AMMUNITION DEPOT HANFTHORNE	MINERAL	NV	A9	102	101	105	165	163	170

REGION - 17

ASR INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
1701 SHIP RESEARCH & DEVMT CTR BONNER	KOOTENAI	ID		62	63	63	73	75	75
1705 NAVAL FACILITY PACIFIC BEACH	GRAYS HARBOR	WA		85	86	86	102	104	104
1705 NAVAL FACILITY COOS HEAD	COOS	OR	A1	85	86	86	102	104	104
1706 AIR STATION OLF COUPEVILLE	ISLAND	WA	A2	81	82	82	96	96	96
1706 AIR STATION WHIDBEY IS	ISLAND	WA	A2	81	82	82	96	96	96
1706 TORPEDO STATION KEYPORT	JEFFERSON	WA	A2	81	82	82	96	96	96
1706 SUPPORT ACTIVITY SEATTLE	KING	WA	A2	81	82	82	96	96	96
1706 AIR STA ALF KITSAP	KITSAP	WA	A2	81	82	82	96	96	96
1706 REGIONAL MED CTR BREMERTON	KITSAP	WA	A2	81	82	82	96	96	96
1706 SHIPYARD BREMERTON	KITSAP	WA	A2	81	82	82	96	96	96
1706 SUBMARINE BASE BANGOR	KITSAP	WA	A2	81	82	82	96	96	96
1706 SUPPLY CENTER BREMERTON	KITSAP	WA	A2	81	82	82	96	96	96
1706 RADIO STATION JIM CREEK	SNOWHISH	WA	A2	81	82	82	96	96	96

TABLE 7
NAVY AND MARINE INSTALLATIONS BY REGION
REGION - 18

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
1801	NAVAL FACILITY CENTERVILLE BEACH	HUMBOLDT	CA		65	66	66	95	96	96
1801	COMMUNICATION STATION STOCKTON	SISKIYOU	CA		65	66	66	95	96	96
1801	SUPPORT ACT MARE IS	SISKIYOU	CA		65	66	66	95	96	96
1803	WEAPONS CENTER CHINA LAKE	KERN	CA		109	114	123	131	137	148
1803	AIR STATION LEMOORE SEQUOIA NATL FOREST	KINGS	CA	A031	109	114	123	131	137	148
1803	NAVAL AIR STATION ALF CROWS LANDING	STANISLAUS	CA	A031	109	114	123	131	137	148
1804	AIR STATION ALAMEDA	ALAMEDA	CA	A042	91	96	100	152	161	168
1804	REGIONAL MEDICAL CENTER OAKLAND	ALAMEDA	CA	A042	91	96	100	152	161	168
1804	SUPPLY CENTER OAKLAND	ALAMEDA	CA	A042	91	96	100	152	161	168
1804	WEAPONS STATION CONCORD	CONTRA COSTA	CA	A042	91	96	100	152	161	168
1804	WEAPONS STATION PITTSBURG	CONTRA COSTA	CA	A042	91	96	100	152	161	168
1804	PUBLIC WORKS CENTER SAN FRANCISCO	SAN FRANCISCO	CA	A042	91	96	100	152	161	168
1804	SUPPORT ACTIVITY TREASURE IS	SAN FRANCISCO	CA	A041	91	96	100	152	161	168
1804	AIR STATION MOFFETT FIELD	SANTA CLARA	CA	A042	91	96	100	152	161	168
1804	SHIPYARD MARE IS	SOLANO	CA	A042	91	96	100	152	161	168
1804	SECURITY GROUP ACTIVITY SONOMA	SONOMA	CA	A051	83	91	94	169	184	192
1805	NAVAL FACILITY BIG SUR	MONTREY	CA	A051	83	91	94	169	184	192
1805	SCOL/POSTGRADUATE ANNEX	MONTREY	CA	A051	83	91	94	169	184	192
1805	SCOL/POSTGRADUATE BEACH AREA	MONTREY	CA	A051	83	91	94	169	184	192
1805	SUPPLY CENTER ESTERO BAY BRANCH	MONTREY	CA	A051	83	91	94	169	184	192
1805	MSLE TEST CTR SAN MIGUEL IS	SAN LUIS OBISPO	CA		83	91	94	169	184	192
1805	MSLE TEST CTR SANTA CRUZ IS	SANTA BARBARA	CA		83	91	94	169	184	192
1806	AMPHIBIOUS BASE SAN CLEMENTE IS	SANTA BARBARA	CA		83	91	94	169	184	192
1806	OCEANS SYSTEMS CENTER SAN CLEMENTE IS	LOS ANGELES	CA		107	97	96	116	105	105
1806	REGIONAL MEDICAL CENTER LONG BEACH	LOS ANGELES	CA	8062	107	97	96	116	105	105
1806	SAN PEDRO FUEL FARM	LOS ANGELES	CA	8062	107	97	96	116	105	105
1806	SHIPYARD LONG BEACH	LOS ANGELES	CA	8062	107	97	96	116	105	105
1806	SUPPLY CENTER LONG BEACH ANNEX	LOS ANGELES	CA	8062	107	97	96	116	105	105
1806	MARCORPS AIR STATION EL TORO	LOS ANGELES	CA	8062	107	97	96	116	105	105
1806	MARCORPS AIR STATION/H/SANTA ANA	ORANGE	CA	8061 8062	107	97	96	116	105	105
1806	NAVAL AIR STA ALF SAN CLEMENTE	ORANGE	CA	8061 8062	107	97	96	116	105	105
1806	RESERVE CTR LOS ALAMITOS	ORANGE	CA	8062	107	97	96	116	105	105
1806	WEAPONS STATION SEAL BEACH	ORANGE	CA	8062	107	97	96	116	105	105
1806	MARCORPS BASE TWENTYNINE PALMS	SAN BERNARDINO	CA		107	97	96	116	105	105
1806	MARCORPS LOGSTS SUP BASE BARSTON	SAN BERNARDINO	CA		107	97	96	116	105	105
1806	AMPHIBIOUS BASE CORONADO	SAN DIEGO	CA	8062 8063	107	97	96	116	105	105
1806	AMPHIBIOUS BASE CUYAMACA MTS	SAN DIEGO	CA	8064	107	97	96	116	105	105
1806	COMMUNICATION STATION SAN DIEGO	SAN DIEGO	CA	8062 8063	107	97	96	116	105	105
1806	ELECTRONIC LAB BORDER FIELD	SAN DIEGO	CA	8062 8063	107	97	96	116	105	105
1806	ELECTRONIC LAB ENG CTR SAN DIEGO	SAN DIEGO	CA	8062 8063	107	97	96	116	105	105
1806	FLT ANTI-SUR MARF TRN CTR SAN DIEGO	SAN DIEGO	CA	8062 8063	107	97	96	116	105	105
1806	FLT COMBAT TRNG CENTER SAN DIEGO	SAN DIEGO	CA	8062 8063	107	97	96	116	105	105
1806	MARCORPS BASE CAMP PENDELTON	SAN DIEGO	CA	8062 8063	107	97	96	116	105	105
1806	MARCORPS RECRUIT DEPOT SAN DIEGO	SAN DIEGO	CA	8062 8063	107	97	96	116	105	105

TABLE 7
NAVY AND MARINE INSTALLATIONS BY REGION
REGION - 18

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
1806	NAVAL AIR STA CAMP WARNER SPRINGS	SAN DIEGO	CA	8064	107	97	96	116	105	105
1806	NAVAL AIR STA OLF IMPERIAL BEACH	SAN DIEGO	CA	8062 8063	107	97	96	116	105	105
1806	NAVAL AIR STA SYCAMORE CANYON	SAN DIEGO	CA	8062 8063	107	97	96	116	105	105
1806	NAVAL AIR STATION MIRAMAR	SAN DIEGO	CA	8062 8063	107	97	96	116	105	105
1806	NAVAL AIR STATION NORTH ISLAND	SAN DIEGO	CA	8062 8063	107	97	96	116	105	105
1806	NAVAL STATION SAN DIEGO	SAN DIEGO	CA	8062 8063	107	97	96	116	105	105
1806	OCEAN SYSTEMS CENTER SAN DIEGO	SAN DIEGO	CA	8062 8063	107	97	96	116	105	105
1806	PUBLIC WORKS CTR SAN DIEGO	SAN DIEGO	CA	8062 8063	107	97	96	116	105	105
1806	REG MED CENT CAMP PENDLETON	SAN DIEGO	CA	8062 8063	107	97	96	116	105	105
1806	REGIONAL MEDICAL CENTER SAN DIEGO	SAN DIEGO	CA	8062 8063	107	97	96	116	105	105
1806	SUBMARINE SUPPORT FAC SAN DIEGO	SAN DIEGO	CA	8062 8063	107	97	96	116	105	105
1806	SUPPLY CENTER FT LOMA ANNEX	SAN DIEGO	CA	8062 8063	107	97	96	116	105	105
1806	SUPPLY CENTER NATIONAL CITY ANNEX	SAN DIEGO	CA	8062 8063	107	97	96	116	105	105
1806	TRAINING CENTER SAN DIEGO	SAN DIEGO	CA	8062 8063	107	97	96	116	105	105
1806	CONSTRUCTION BATTALN CTR	VENTURA	CA	8065	107	97	96	116	105	105
1806	MSLE TEST CTR LAGUNA PEAK	VENTURA	CA	8065	107	97	96	116	105	105
1806	MSLE TEST CTR PRINCE IS	VENTURA	CA	8065	107	97	96	116	105	105
1806	MSLE TEST CTR SANTA BARBARA IS	VENTURA	CA	8065	107	97	96	116	105	105
1806	PACIFIC MISSILE TEST CENTER	VENTURA	CA	8065	107	97	96	116	105	105
1806	NAT PARACHUTE TEST RANGE	IMPERIAL	CA	8062 8064	107	97	96	116	105	105
1807	MARCORPS TRAINING CAMP BRIDGEPORT	MONO	CA		110	110	111	142	141	143

REGION - 19

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
1901	OCEAN SYS CTR CAPE PRINCE OF WALES	NOME	AK	89	95	95	95	108	108	108
1901	COMMUNICATION STATION ADAK	ALEUTIAN ISLANDS	AK	816	95	95	95	108	108	108
1901	NAVAL STATION ADAK	ALEUTIAN ISLANDS	AK	816	95	95	95	108	108	108

TABLE 7
NAVY AND MARINE INSTALLATIONS BY REGION
REGION - 20

ASR	INSTALLATION	COUNTY	ST	PROBLEMS	75	85	00	75	85	00
2003	COMM AREA MASTER STATION MAHIAMA	HONOLULU	HI	86-4	80	82	85	111	113	118
2003	FLT OPNS CNTRL CTR KUNIA	HONOLULU	HI	86-4	80	82	85	111	113	118
2003	MAGAZINE KOLE KOLE PASS	HONOLULU	HI	86-5	80	82	85	111	113	118
2003	MAGAZINE LOWER KIPAPA	HONOLULU	HI	86-5	80	82	85	111	113	118
2003	MAGAZINE LUALUALEI	HONOLULU	HI	86-5	80	82	85	111	113	118
2003	MAGAZINE MAIKELE	HONOLULU	HI	86-5	80	82	85	111	113	118
2003	MAGAZINE MAIPO PENINSULA	HONOLULU	HI	86-5	80	82	85	111	113	118
2003	MAGAZINE WEST LOCH	HONOLULU	HI	86-5	80	82	85	111	113	118
2003	MARCORPS AIR STATION KANEOME BAY	HONOLULU	HI	86-2	80	82	85	111	113	118
2003	MARCORPS CAMP H M SMITH	HONOLULU	HI	86-4	80	82	85	111	113	118
2003	NAVAL AIR STA ALF FORD IS	HONOLULU	HI	86-4	80	82	85	111	113	118
2003	NAVAL AIR STA KAHOLANE IS	HONOLULU	HI	86-4	80	82	85	111	113	118
2003	NAVAL AIR STA KAULA ROCK	HONOLULU	HI	86-4	80	82	85	111	113	118
2003	NAVAL AIR STATION BARBERS POINT	HONOLULU	HI	86-4	80	82	85	111	113	118
2003	NAVAL STATION CAMP CATLIN	HONOLULU	HI	86-4	80	82	85	111	113	118
2003	NAVAL STATION FORD IS	HONOLULU	HI	86-4	80	82	85	111	113	118
2003	NAVAL STATION HOKULANI	HONOLULU	HI	86-4	80	82	85	111	113	118
2003	NAVAL STATION MAKALAPA	HONOLULU	HI	86-4	80	82	85	111	113	118
2003	NAVAL STATION OHANA NW	HONOLULU	HI	86-4	80	82	85	111	113	118
2003	NAVAL STATION PEARL CITY	HONOLULU	HI	86-4	80	82	85	111	113	118
2003	NAVAL STATION PEARL HARBOR	HONOLULU	HI	86-4	80	82	85	111	113	118
2003	PUBLIC WORKS CTR PEARL HARBOR	HONOLULU	HI	86-4	80	82	85	111	113	118
2003	SHIPTARD PEARL HARBOR	HONOLULU	HI	86-4	80	82	85	111	113	118
2003	SUBMARINE BASE PEARL HARBOR	HONOLULU	HI	86-4	80	82	85	111	113	118
2003	SUPPLY CENTER HONOLULU	HONOLULU	HI	86-4	80	82	85	111	113	118
2003	MAGAZINE PORT ALLEN	KAUAI	HI	87-3	77	77	77	105	105	104
2004	MISSILE FACILITY BARKING SANDS	KAUAI	HI	87-5	77	77	77	105	105	104
2004	MISSILE FACILITY PORT ALLEN	KAUAI	HI	87-3	77	77	77	105	105	104
2004	MSLE FACILITY MAKANA RIDGE	KAUAI	HI	87-3	77	77	77	105	105	104

APPENDIX B

SYNOPTIC DESCRIPTIONS OF WATER RESOURCES PROBLEMS

This appendix contains synoptic descriptions of those major water resource problem areas in which military installations are located. The descriptions were prepared by the US Water Resources Council from information provided by each of the water resources regions. See US Water Resources Council, The Nation's Water Resources, The Second National Assessment of the US Water Resources Council (Draft), Washington, D.C., October 1977, Appendix A: "Synoptic Descriptions of the Nation's Major Water Problems."

The category of each problem, A or B, was determined by the regional authorities. Category B problems are those for which a solution has been agreed upon by state and federal authorities, but implementation has not begun. Category A problems are those which have not yet been studied, or if studied the solution has not yet been agreed upon by all agencies. Category A problems are listed chronologically before the Category B problems for each region, and in some southwestern states (Regions 11 and 13) the problems are further broken down and listed alphabetically by state.

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE NEW ENGLAND REGION (1)

Problem Area 1: Saint John River Basin (Maine) ASR 0101, Category A

Water

- Pollution from M&I wastes, pesticides, fertilizers
- Supplies inadequate for irrigation during spring

Flooding

- Urban flood damages
- Potential cumulative failure of old mill dams could cause severe damages
- Controversy over building Dickey-Lincoln School Lakes dam

Related Lands

- Agricultural erosion causes loss of soil, silting of surface waters, affecting fish and wildlife habitat

Financial

- Local funding insufficient for municipal wastewater treatment facilities
-

Problem Area 2: Saint Croix River Basin & Eastern Maine Coastal Area ASR 0101, Category A

Water

- Quality below Woodland degraded by decomposing deposits of logs and wood fibers
- Many coastal clam flats closed due to degraded water quality from improper wastewater disposal

Flooding

- Damage potential increasing due to continuing development of flood plains, wetlands
- Lack of flood plain land use regulations in smaller communities

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE NEW ENGLAND REGION (1)

Related Lands

- Fluctuating lake levels for power cause shore erosion, limit camp access, cause silting, harm fish habitat

Problem Area 3: Penobscot River Basin (Maine)
ASR 0101, Category A

Water

- Quality degraded by municipal discharges into main stem from Old Town, Bangor, and Brewer
- Recreation, fish habitat, adversely affected in above areas and by eutrophication in Pushaw Lake
- Future supplies in doubt due to lack of data on ground water availability and dynamics

Flooding

- Extreme flash flood damages on the Piscataquis River
- Severe flood potential in rural and urban areas from poorly maintained mill dams

Related Lands

- Development of wetlands reducing flood storage

Financial

- Local funds inadequate for upgrading of municipal treatment plants

Institutional

- Suit by Penobscot Indians claims much of basin land

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE NEW ENGLAND REGION (1)

Problem Area 4: Maine Central Coastal Area
ASR 0101, Category A

Water

- Major threat to water quality from improper solid waste disposal
- Ponds and streams polluted by non-point sources; e.g.; septic tank leachates and livestock wastes
- Coastal clam flats closed due to municipal and seafood plants pollution
- Water quality of Rockland Harbor affected by municipal dredging
- F&WL habitat at mouth of Kennebec River threatened by disposal of dredged materials

Related Lands

- Natural beach erosion accelerated by poorly planned development

Financial

- Money and land lacking to deal adequately with solid wastes
-

Problem Area 7: Presumpscot River Basin & Casco Bay Area (Maine)
ASR 0101, Category A

Water

- Poor quality, aquatic habitat, recreation impaired by low flows resulting from temporary impoundments when a major paper company shuts down
- Coastal water quality affected by stormwater runoff and direct piping of wastewater to Portland Harbor
- Shellfish areas in Scarborough contaminated by improper underground sewage disposal
- Ground water supplies contaminated by improper subsurface disposal
- Portland water supply from Sebago Lake threatened by septic systems of second homes

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE NEW ENGLAND REGION (1)

Related Lands

- Second home development, suburban sprawl, and recreational use of resources increasing pressures on water supplies, water quality, and F&WL habitats

Financial

- Many communities unable to provide local share of costs of municipal treatment facilities

Problem Area 9: New Hampshire Coastal Area
ASR 0102, Category A

Water

- Coastal waters biologically polluted, recreational and commercial fishing severely limited, as result of population growth in coastal and tidal sections
- Inland water quality adversely affected by development
- Algae growth in lakes accelerated by domestic, agricultural and industrial discharges
- Continued contamination of groundwater supplies may result in increased competition by M&I interests for possibly inadequate surface supplies

Related Lands

- Lack of effective land use regulations in populous SE portion may cause major conflicts among residential, industrial, recreational, transportation, and flood plain developments, and preservation of wetlands

Problem Area 10: Merrimack River Basin Area (Massachusetts, New Hampshire)
ASR 0102 & 0103, Category A

Water

- Conflicting demands for municipal water supplies from river for urban areas of both eastern Mass. and S.E. New Hampshire

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE NEW ENGLAND REGION (1)

- Ground water supplies insufficient to meet 1990 maximum daily demands in many suburban towns
- Supply of ground water limited by naturally high iron and manganese levels
- River and estuary polluted by raw municipal sewage, industrial wastes, and combined sewer overflow
- Use of water for drinking requires expensive treatment and filtration
- Swimming, boating, fishing limited
- Spichet River polluted by secondary treatment plant discharges
- Nashua River receiving untreated paper processing wastes, inadequately treated municipal wastes, combined sewer overflows, and urban runoff
- Assabet River low flows of poor quality despite flow augmentation project; unable to assimilate municipal treatment plant effluents
- Sudbury and Concord Rivers cannot maintain high quality because of sluggish flows

Flooding

- All communities along river suffer significant urban damages (estimated to reach \$19 million by year 2000)
- Flood plain development reducing storage capacity of wetlands, affecting adversely F&W habitat, increasing damage potential

Related Lands

- State and local land use regulations inadequate, allowing development to conflict with preservation of natural areas, and with recreation

Problem Area 19: Thames River Basin and Connecticut Eastern Coastal Area (Massachusetts, Connecticut)
ASR 0104, Category A

Water

- Entire Thames water quality degraded by combined sewer overflows, industrial effluents, agricultural runoff, and oily bilge discharges from ships
- Quinebaug River polluted by inadequately treated municipal wastes from Southbridge, Mass., and paper wastes from Dudley, Mass.
- French River water quality impaired by untreated textile and municipal wastes from Dudley and Webster, and inadequate natural low flows for assimilation
- Lake eutrophication accelerated by intense shoreline development and

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE NEW ENGLAND REGION (1)

- nutrients from feeder streams, causing recreational losses
- Probable shortage of potable water supplies for increased population

Related Lands

- Loss of land and subsequent silting of streams and lakes due to erosion of croplands, streambanks, construction sites
- Erosion degrading fish habitat and lowering recreational opportunities
- Beach erosion and recreation losses

Problem Area 20: Lake Champlain Basin Area (Vermont, New York)
ASR 0106, Category A

Water

- Lake water quality degraded by biological wastes and eutrophication from nutrients from point and non-point sources
- Fish habitat around rocky reefs being overgrown with aquatic vegetation
- Water quality also affected by waste water discharges, old sludge beds below paper mill at Ticonderoga, N.Y., and oil transported up Champlain Barge Canal

Flooding

- High damage potential in urban areas (Barre, Montpelier, Waterbury) along Winooski River, and agricultural areas on tributaries to lake

Related Lands

- Natural lake fluctuations, about 6 feet per year, cause flooding, erosion, disruption of recreational uses and assimilative capacity

Institutional

- Lack of single agency for effective basinwide focus on problems
- Inadequate coordination between State and local governments in Vermont on flood plain management

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE NEW ENGLAND REGION (1)

Problem Area 11: Massachusetts Coastal Area (Massachusetts, Rhode Island)
ASR 0103, Category B

Water

- Over half of assessed mileage of tributaries to Boston Harbor too polluted to meet Class B standards by 1983
- Mystic, Charles, and Neponset Rivers degraded, recreation and fish habit threatened by combined sewer overflows, domestic septic systems, M&I wastes, sludge disposal, landfill leachates and runoff
- Eutrophication of waters in Cape Cod and South Shore regions from domestic septic system sources
- Marine water quality degraded by pollution from over 125 combined sewer overflow points, stormwater, sludge disposal, vessel wastes, with closing of shellfish areas, and coastal recreation threatened
- Boston Harbor polluted by oil spills from ship-shore transfers and tank farms
- Critical water supply shortages probable due to lack of protection of existing supplies, enforcement of conservation measures, and development of additional sources
- Metropolitan District Commission (Boston area) overtaxing safe yield of present water supplies
- Probable shortages for many towns with own supplies
- Rural and municipal ground water supplies threatened by malfunctioning septic systems, highway salt, landfill leachates
- Shortages of only supply source of ground water probable for Plymouth, Cape Cod, Martha's Vineyard, and Nantucket, because of overpumping, salt water intrusion, paving over or contamination of aquifer recharge areas

Flooding

- Coastal flooding of urban areas (15,000 acres on South Shore) worsened by development and rebuilding in naturally hazardous areas

Related Lands

- Clam beds in Gloucester, Newbury, Salem, Revere, and Saugus, destroyed by dredge and fill operations
- Critical rate of coastal erosion accelerated by development and recreational overuse
- Land use conflicts for sand and gravel mining, agriculture, preservation of critical environmental and historic areas, and expansion of recreational facilities

SYNPOTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE NEW ENGLAND REGION (1)

Problem Area 12: Narragansett Bay Area (Rhode Island)
ASR 0103, Category B

Water

- Severe quality problems in Providence and Mt. Hope Bays
- Upper Narragansett Bay pollution caused principally by overflows from combined sewers in Providence
- Mt. Hope Bay polluted by combined sewer overflows, Fall River, and overloaded waste treatment plants
- Recreation limited and shellfish areas closed during and after heavy rainfalls
- Bays polluted by oil spills from tankers and bilge discharges from commercial vessels
- Tributary rivers polluted by inadequately treated municipal and industrial wastewaters
- Urban runoff, especially from Brockton, Taunton, Fall River, affects water quality
- Surface and ground water supplies inadequate to meet projected 1990 needs in many parts of area
- Ground water scarce due to salt water intrusion, thin aquifers
- Ground water supplies polluted or threatened by landfill leachates and salt water intrusion
- Norton Reservoir quality degraded by discharge from Mansfield municipal treatment facility

Flooding

- Coastal areas subject to severe flooding from hurricanes and other storms
- Will become more severe if barrier beaches are allowed to be destroyed

Related Lands

- Severe erosion of agricultural lands in Little Compton, Middletown, Portsmouth, Tiverton, R. I.
- Worst urban erosion in Middletown, North Kingston, Warwick, R. I.
- Barrier beaches along southern coast eroded due to residential development, reducing storm buffers and aggravating flood damages
- Capacities of existing public beaches, marinas, camping and boating areas, especially on southern coast, insufficient to meet current demands

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE NEW ENGLAND REGION (1)

Financial

- Federal, State, and local financing currently inadequate for necessary construction of municipal plants and correction or treatment of combined sewer overflows
-

Problem Area 13: Blackstone River Basin Area (Massachusetts)
ASR 0103, Category B

Water

- Quality degraded by M&I discharges, combined sewer overflows
- Ground water supplies degraded by sanitary landfill leachates, malfunctioning septic systems, urban runoff
- Ground water recharge and yields reduced by development north of Lake Quinsigamond
- Private wells in Sutton and municipal wells in Auburn, Mass., contaminated by highway de-icing salt

Flooding

- Existing severe flood damage potential increased by encroachment of development and highway construction on flood plains and loss of wetland storage

Related Lands

- Development conflicts with preservation of aquifer recharge areas, agricultural lands, and unique natural and cultural sites
 - Loss of F&WL habitat
-

Problem Area 14: Pawtuxent River Basin Area (Rhode Island)
ASR 0103, Category B

Water

- Main stem severely polluted, affecting recreational and aquatic use
- Existing surface and ground water supplies insufficient to meet 1995 projected demands

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE NEW ENGLAND REGION (1)

- Potentially valuable supplies polluted by urbanization of aquifers (e.g., Cranston-Providence area), decreased recharge, increased urban runoff
- Low flows limit assimilative capacity; aggravated by regulation for industries, existing and proposed out-of-basin transfers

Flooding

- Severe riverine flooding intensified by lack of wetlands storage and by significant urban and industrial development
- Tidal flooding along lower Pawtuxent during synchronization of hurricane tides with river flood flows

Related Lands

- Severe shortage of recreational (swimming, picnicking, boating) facilities by 1990
- Public access to ponds and streams in conflict with urban use and protection of water supplies

Problem Area 16: Connecticut River Basin and Connecticut Central Coastal Area (Vermont, New York, Massachusetts, Connecticut)
ASR 0105, Category B

- Water supply demands increasing within basin and for diversions to Boston Metropolitan Area
- Cumulative decrease in water supplies due to diversion, cooling water withdrawals, industrial processes, may grow more serious if consumption is not evaluated and planned
- Several Massachusetts communities developing shortages in local ground and surface supplies
- Connecticut's supplies east of river and north of Hartford barely adequate for present use, unable to accommodate growth
- New diversions could limit downstream uses, cause salt water to migrate upriver, reduce ground water recharge, harm F&WL habitats
- Upper basin concern on need to maintain minimum flows above and below diversions may preclude withdrawals and limit use in Vermont and New Hampshire
- Basin-wide water quality problems include:
 - Vermont: municipal sewage systems; urban runoff, failure of onsite disposal, agricultural runoff
 - New Hampshire: industrial discharges and municipal systems
 - Massachusetts: urban and industrial discharges

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE NEW ENGLAND REGION (1)

- Connecticut: commercial and industrial wastes, agricultural runoff
- Low stream flows on tributaries insufficient to assimilate wastes

Flooding

- All coastal communities affected by tidal flooding, damaging residential and recreational uses
- Riverine flooding problems, especially in urban areas along upstream tributaries
- Flooding in northern portion aggravated by ice jams
- Existing six main stem local protection projects not high enough to provide presently desired degree of protection

Related Lands

- Existing State and local programs inadequate to guide development away from flood plains and to protect wetlands with high storage potential

Institutional

- Vermont laws currently inadequate to protect dwindling ground water supplies
- Connecticut State law prohibits potable withdrawals from waters receiving wastes, no matter how well treated
- Current pollution abatement programs in basin hampered by:
 - coordination lacking among States and coordination between Federal, State and local agencies
 - inadequate enforcement of Federal laws such as regulation of vessel discharges
 - inadequate funding and inefficient programs at various governmental levels in Massachusetts
 - lack of control over non-point pollution sources in Vermont
 - deficiencies in enforcing programs for control of paper company wastes on some rivers
 - lack of information and Federal authorization of sewage disposal systems other than treatment plants
 - general lack of attention to land use controls to achieve water quality goals

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE MIDDLE
ATLANTIC REGION (2)

Problem Area 1, Sub-area 12a: Mohawk River above Little Falls, New York, and
Herkimer, Oneida, and Hamilton Co's, New York
ASR 0201, Category B

Institutional

- Lack of regional entity to coordinate plans in on-going Hudson River
basin Level B Study Area, and financing of water-related programs and
projects
- Conflicts between up- and downstream uses

Problem Area 2, Sub-area 12b: Bennington Co., Vermont; NW sect. Berkshire Co.,
Massachusetts; part of New York State
ASR 0201, Category B

Water

- Pollution by M&I and solid wastes
- Eutrophication of many Adirondack lakes from wastes of second home
development
- Pollution from acid precipitation

Institutional

- Lack of regional entity to coordinate plans in Level B Study Area, and
financing of programs and projects
- Conflicts between up-and downstream uses

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE MIDDLE
ATLANTIC REGION (2)

Problem Area 3, Sub-area 12c: New York State portion of Hudson River
Basin (Remainder)
ASR 0201, Category B

Water

- Organic and inorganic chemical pollution caused by paper and primary metals industries
 - Power and other industries use Hudson as a heat sink; may exceed capacity
 - Major need for allocation of available water among uses (waste disposal, water supplies, power generation)
 - Quality and F&WL habitat affected by dredged material disposal
-

Problem Area 4, Sub-area 13a: Nassau and Suffolk Co's., New York
(Long Island)
ASR 0202, Category B

- New supply sources needed for Nassau Co. soon and Suffolk Co. later
 - Needed supply and waste disposal systems imply inter-basin transfers
 - Ground water unprotected from contamination by excess nitrate input
 - Ground water in SW corner of Nassau Co. affected by salt water intrusion, due to intensive pumping, high permeability, changing natural conditions
-

Institutional

- Conflicts over off-shore oil and gas drilling, nuclear plant construction, existing recreational use, land use patterns, transportation, social and economic structure, and visual, cultural, environmental and wetland uses
- Fragmented authorities will affect implementation of regional water supplies, coastal zone and regional wastewater management, and land use planning

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE MIDDLE
ATLANTIC REGION (2)

Program Area 5, Sub-area 13b: New York City and Westchester County, New York
ASR 0202, Category B

Water

- Control of point sources of pollution, and storm water runoff a major problem in New York City
- Nitrogen input depleting oxygen in apex of New York Bight
- Thermal discharges may be beyond heat dissipation capacity of Hudson estuary (data inadequate for environmental evaluation)
- Conflicts in land and water use aggravated by transport of oil, gas and other commodities
- Pollution control in Long Island Sound requires implementation and maintenance of chemical and thermal control programs adopted earlier

Related Lands

- Many shoreline facilities obsolete; modern facilities and channel enlargement needed for water quality and navigation

Problem Area 6, Sub-area 14: Passaic, Raritan, Elizebath, & Hackensack River Basins, New Jersey; Orange & Rockland Co's, New York.
ASR 0202, Category B

Water

- Surface supplies in Passaic & Hackensack Basins critical and near optimum development
- quality affected by inadequate protection of intakes, located below major waste discharge locations
- Downstream quality affected by withdrawals, insufficient system inter-connections, inadequate region-wide waste treatment, non-point urban and rural pollution
- Emergency planning needed for supply and fire protection crises due to system breakdown or drought

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE MIDDLE
ATLANTIC REGION (2)

Flooding

- Intensively developed areas extremely vulnerable
-

Problem Area 8, Sub-area 15: Delaware River Basin below Montague &
above Trenton, New Jersey
ASR 0203, Category B

Water

- Critical minimum flows, pollution assimilation capabilities, volume of fresh water entering Delaware Bay, increasingly affected by consumption by cooling and irrigation uses
 - Conflicts increasing with needs of simultaneous uses
-

Institutional

- Review of 1954 Court decision on upstream reservoir releases
-

Problem Area 10, Sub-area 15d: Schuylkill River below Pottstown, Pa
& Delaware River below Trenton, New Jersey (New Jersey, Delaware,
Pennsylvania)
ASR 0203, Category B

Water

- Quality polluted by M&I wastewater, thermal discharges, sediment, agricultural chemicals, oil spills, urban storm runoff
 - Conflicts over allocation among simultaneous users, and effect of consumption on estuary salinity
 - Dredging and dredged materials disposal
 - Groundwater threatened by salinity intrusion, recharge problems
-

Flooding

- Damages increasing due to heavy development in and inadequate management and protection of flood plains

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE MIDDLE
ATLANTIC REGION (2)

Institutional

- Conflicts over off-shore and on-shore development, water needs, impacts
- Fragmented authorities

Problem Area 11, Sub-area 16a: Monmouth County, New Jersey (Atlantic Ocean drainage)
ASR 0203, Category B

Water

- Marine quality affected by sewer outfalls, waste disposal at sea, off-shore sludge disposal, importing of wastes
- Deep water port development may impact on marine quality and on-shore land uses

Related Lands

- Conflicts among land use patterns, transportation systems, social and economic structures, visual, cultural, and environmental uses due to proximity of many oil refineries and major petroleum markets

Institutional

- Impacts and conflicts over resources and uses of continental shelf for offshore dumping, power plant and deep port sites, and fishing

Problem Area 12, Sub-area 16b: New Jersey, excluding Monmouth County, draining into Atlantic Ocean
ASR 0203, Category B

Water

- Water quality affected by sewer outfalls, waste disposal at sea, off-shore sludge disposal, importing of wastes
- Deep water port development may impact on marine quality and on-shore land uses

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE MIDDLE
ATLANTIC REGION (2)

Related Lands

- Unique wetlands, pine barrens, and recreational areas could suffer major impacts from development of transport lines for offshore nuclear plants

Flooding

- Extremely high storm damage potential due to intensive recreational development of barrier beaches

Problem Area 13, Sub-area 17a: Susquehanna River Basin above Towanda, Pennsylvania (New York and Pennsylvania)
ASR 0204, Category B

Water

- Low groundwater yields in areas with increasing demands; inadequate knowledge of inter-relations between surface and ground water
- Supplies threatened by withdrawals for irrigation and for Elmira M&I supply, exceeding recharge
- Protection of recharge areas and management of withdrawals in upper Canisteo and Cohocton valleys, and in Cortland and Singhamton urban areas
- Surface supplies affected by local and interbasin exchanges, impacting on environmental, M&I and other uses
- Consumptive uses decreasing fresh water supply to Chesapeake Bay, affecting salinity

Related Lands

- no effective flood damage reduction and flood plain management programs

Flooding

- Local flooding problems throughout basin

Financial

- Lack of funding, and administrative guidelines for non-structural solutions in Federal flood control projects under 1974 Water Resources Development Act

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE MIDDLE
ATLANTIC REGION (2)

Problem Area 14, Sub-area 17b: West Branch of Susquehanna River above
Williamsport, Pennsylvania
ASR 0204, Category B

Water

- Quality degraded, use of streams limited, by acid drainage from abandoned coal mines

Flooding

- Local flooding problems

Financial

- Insufficient acid mine drainage abatement funds
 - Lack of funding and administrative guidelines on non-structural flood damage reduction measures under 1974 WRDA
 - Local financial difficulties in constructing water supply and waste treatment facilities
-

Program Area 15, Sub-area 17c: Juniata River Basin above Newport,
Pennsylvania
ASR 0204, Category B

Water

- Low ground water yields and increasing demands; inadequate knowledge of ground and surface water inter-relationships

Flooding

- Lack of effective programs to meet local flooding problems

Financial

- Lack of funding and administrative guidelines on non-structural measures under 1974 WRDA

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE MIDDLE
ATLANTIC REGION (2)

- Increasing local financial difficulties in constructing waste water and water supply facilities

Problem Area 16, Sub-area 17d: Susquehanna River Basin above Harrisburg, Pennsylvania (excl. Sub-areas 17a, 17b, 17c)
ASR 0204, Category B

Water

- Supply affected by cumulative effects of upstream and in-area problems
- Quality degraded by acid drainage from abandoned mines in Lackawanna River valley below Carbondale, and in Wyoming valley below junction with main stem
- Stream quality and Chesapeake Bay salinity will be further affected by proposed consumptive increases

Flooding

- Local flooding problems

Financial

- Lack of funding and guidelines for non-structural measures under 1974 WRDA
- Insufficient acid mine drainage abatement funds
- Increasing local financial difficulties in constructing water supply and waste treatment facilities

Problem Area 17, Sub-area 17e: Lower Susquehanna River Basin
(Pennsylvania, Maryland, Delaware)
ASR 0204, Category B

Water

- Low ground water yields and increasing demands as in upper portions of basin
- Flow depleted by diversions to Chester County, Pa, and Baltimore City, Harford and Cecil Counties, Md., conflicting with other uses

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE MIDDLE
ATLANTIC REGION (2)

- Fresh water flows to Chesapeake Bay depleted by consumptive uses, with further impacts by proposed power plants, and increased M&I and agricultural uses

Flooding

- Local flooding problems throughout

Financial

- Lack of funding and guidelines for non-structural flood damage reduction measures under 1974 WRDA
- Increasing local financial difficulties in constructing water supply and waste treatment facilities

Problem Area 18, Sub-area 18a: Small Maryland streams draining into West Side of Chesapeake Bay
ASR 0205, Category B

Water

- Pollution in Baltimore Harbor and nearby Bay from navigation channel deepening, and conflict with surrounding uses
- Quality of Bay degraded by pollution from local tributaries and Susquehanna River
- F&WL needs, navigable depths, visual, cultural, environmental, and recreational values degraded by sediment from tributaries
- Conflict over dredged material disposal sites adjacent to Baltimore Harbor and Chesapeake and Delaware Canal
- Adverse effects on recreation, commercial and sport fishing, bay ecosystem, from increased diversions from tributaries for power, M&I supplies, and from possible enlargement of C&D Canal

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE MIDDLE
ATLANTIC REGION (2)

Problem Area 19, Sub-area 18b: Small Delaware, Maryland, Virginia
streams draining into east side of Chesapeake Bay or into Atlantic Ocean
(Delmarva Peninsula)
ASR 0205, Category B

Water

- Pollution of Chesapeake Bay from tributaries
- Sediment loads from Chester and Choptank Rivers affecting fishing and small craft harbors

Flooding

- Some local flooding
- High potential erosion and tidal flood damage to ocean shore recreational developments and barrier beaches

Problem Area 22, Sub-area 19c: Lower Potomac River Basin (excl. Sub-areas
19a, 19b) (Maryland, Virginia, District of Columbia)
ASR 0206, Category B

Water

- Summer demands for Washington metropolitan area have exceeded historic minimum flow
- F&WL and recreation adversely affected by inadequately treated wastewater and combined sewer overflows
- Increased consumptive use above Dickerson will adversely affect the estuary, F&WL needs, and municipal supplies

Related Lands

- Erosion of and sediment from Monacacy River Basin and northern Montgomery, Co., Md, detrimental to downstream water quality, uses of river and estuary, and land productivity

Financial

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE MIDDLE
ATLANTIC REGION (2)

- Financing regional water supply systems, and water quality control projects to complete Federal and State programs, possibly beyond local means

Problem Area 24, Sub-area 20b: York River Basin (Virginia)
ASR 0206, Category B

Water

- Degraded quality closing some shellfish areas occasionally, and affecting recreation needs and wetland protection
- Increased irrigation needs conflicting with increased water supply demands
- Competition for limited supplies between F&WL, M&I needs, and rural uses

Financial

- Financing for regional water supply systems to be resolved

Problem Area 26, Sub-area 21b: James River Basin above Hopewell, Virginia, incl. Chickahominy River (excl. Sub-area 21a)
ASR 0206, Category B

Water

- Second home development competes for available supply with other uses

Financial

- Financing and repayment arrangements for regional water supply facilities may be inadequate
- Financing for continuation of water quality programs to meet deadlines of PL 92-500 may be inadequate

Program Area 27, Sub-area 21c: James River Basin below confluence with Chickahominy River
ASR 0206, Category B

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE MIDDLE
ATLANTIC REGION (2)

Water

- Supply demands of Norfolk and Virginia Beach expected to exceed safe yields
- Continued or increased pumping of ground water may cause salt water intrusion and land subsidence
- Second home development competes for available supply with other uses
- Rapid growth of industrial demands on ground water for cooling and processing may lower aquifer levels

Financial

- Inadequate funding for regional water supply systems
- Meeting deadlines under PL 92-500 difficult at present funding levels

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE SOUTH ATLANTIC-
GULF REGION (3)

Problem Area 301a: Upper Roanoke River Basin (North Carolina, Virginia)
ASR 0301, Category A

Water

- Interbasin transfers from Dan River for urban North Carolina industrial area, affect low flows, quality
- Need to control and store flood waters, control sediment, for downstream fisheries, power, navigation
- Increased demands on groundwater lowering water table

Related Lands

- Lack of land use controls resulting in large-scale urbanization, floodplain development, drainage of wetlands, and saline imbalance of inland waters, impacts on F&WL, recreation, erosion and sedimentation, reduction of reservoir capacity and navigable depths downstream
- Competition between uses for land and water
- Lack of proper management of mountain resources in NC
- Pronounced streamback erosion in lower Piedmont Province; maximum in Upper Coastal Plains, during high water

Flooding

- Tributary damages above existing reservoirs, due to fast runoff, late winter and spring rains, severe storms
- Lowland flooding and poor drainage due to sustained releases from John H. Kerr Res.

Problem Area 301b: Chowan--Lower Roanoke River Basin Area (North Carolina, Virginia)
ASR 0301, Category A

Water

- Additional interbasin transfers from Chowan and potentially lower Roanoke) will be required for expanding urban SE Virginia area (Mid-Atlantic Region) impacting on quality, low flows, power production, F&WL

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE SOUTH ATLANTIC-
GULF REGION (3)

- Heavy groundwater pumping by industry in Franklin area lowering water table, taxing potential, increasing chlorides
- Urban supply shortages threatened
- Eutrophication in Lower Chowan River, Albemarle and Pamlico Sounds, from M&I and agricultural wastes
- Shellfish harvesting, commercial and sport fishing, and recreation threatened by bacterial, thermal and chemical pollution
- consumptive uses of water reducing flows to Sounds, affecting salinity balance, marine life, anadromous fish runs
- Low level releases from stratified reservoirs reducing DO, harming fish propagation
- Organic drainage from swamps increases color, reduces DO, pH
- Quality degraded by M&I wastes, swamp drainage; former expected to double or more by year 2000
- Low flows from peaking power operations reduce stream assimilative capacities, also to be affected by planned large industrial expansion

Related Lands

- Potential conversion of wetlands to agricultural uses will degrade water quality in sounds and estuaries by increased runoff; affect subsidence by biochemical oxidation of underlying organic soils, peat fires, wind storms, and water withdrawals
- Lack of land use controls resulting in large-scale urbanization, floodplain development, drainage of wetlands, and saline imbalance of inland waters, impacts on F&WL, recreation, erosion and sedimentation, reduction of reservoir capacity and navigable depths downstream
- competition between uses for land and water

Flooding

- Tidal flooding and damages to croplands, urban, recreational, navigation developments, shipping interests, beaches and National Seashores

Financial

- Need for more than secondary treatment in many "water quality limited" areas to meet 1983 goals economically burdensome to local communities

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE SOUTH ATLANTIC-
GULF REGION (3)

Problem Area 302: Tar-Neuse River Basins (North Carolina)
ASR 0301, Category A

Water

- Quality degraded by M&I, agricultural, thermal wastes, land drainage, causing eutrophication in lower reaches and Pamlico Sound, impacting shellfish, commercial and sport fishing, recreation
- consumptive uses reducing low flows, salinity balance, anadromous fish runs
- Groundwater de-watering for open-pit phosphate mining has lowered water table below sea level over 800 sq. mi. in Beaufort Co. area; pumping rate expected to double; threat of saltwater intrusion
- Need to control and store floodwaters, sediment, for downstream fisheries, navigation
- Shallow, shifting ocean inlet channels restrict commercial fishing and seafood harvest, recreational boating
- Morehead City Harbor depths inadequate for large ships for phosphate traffic
- Quality degraded by residual wastes and urban runoff in headwaters; low flows; streams unable to assimilate wastes, depleting DO and affecting fish life
- Non-point sources degrading Neuse and streams near Durham and Raleigh

Related Lands

- Lack of land use controls resulting in large-scale urbanization, floodplain development, drainage of wetlands, and saline imbalance of inland waters, impacts on F&WL, recreation, erosion and sedimentation, reduction of reservoir capacity and navigable depths downstream
- Competition between uses for land and water
- Lack of proper management of mountain resources in NC
- Poor surface drainage restricts crop and forest production; remedy detrimental to F&WL
- Stream capacity reduced by logging debris, cutting of streambank vegetation; aggravating flooding
- Erosion & sedimentation in Piedmont & upper Coastal Plains caused by wind & water on lands, gullies, streambank, channels, flood plains, & by agricultural practices, clear cutting of timber, construction
- Shore erosion along Pamlico Sound, and ocean

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE SOUTH ATLANTIC-
GULF REGION (3)

Flooding

- Tidal flooding and damages to croplands, urban, recreational, navigation developments, shipping interests, beaches and National Seashores
- Agricultural damages increasing; urban damages aggravated by intensive development of floodplains and coastal lands

Financial

- Need for more than secondary treatment in many "water quality limited" areas to meet 1983 goals economically burdensome to local communities

Problem Area 303: Cape Fear River Basin Area (North Carolina)
ASR 0301, Category A

Water

- Need to control and store flood waters, control sediment, for downstream fisheries, power, navigation
- Increased demands on groundwater lowering water table
- Urban supply shortages threatened
- Eutrophication in lower reaches, consumptive uses, low flows, M&I and agricultural wastes, impact shellfish, commercial and sport fishing, recreation, anadromous fish runs
- Competition for water by irrigation, navigation, thermal power, M&I uses may exceed low stream flows during 1985-2000 period
- Major use of groundwater may lead to depletion and saltwater intrusion
- Groundwater not readily available, surface flows small in headwaters
- Insufficient depths for future navigation from Acme to Fayetteville
- Commercial shipping limited, fishing and recreational traffic endangered
- Navigation lock operation limits spawning run of anadromous fish
- Water quality degraded on main stem and tributaries from upstream wastes
- B. Everett Jordan (New Hope) Reservoir cannot be filled until potential quality problems from upstream wastes are resolved

Related Lands

- 18% of acreage inadequately drained for agricultural use; drainage would impact F&WL
- Erosion and sedimentation of croplands, forest harvesting urbanization, streambanks, reducing water quality, causing silting of crop and pasture

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE SOUTH ATLANTIC-
GULF REGION (3)

- lands, flood plains, reservoir storage, navigation channels
- Shoreline erosion losses exceed replacement; destroying recreational beaches
- Competition between land and water uses

Flooding

- Tidal flooding and damages to croplands, urban, recreational, navigation developments, shipping interests, beaches and National Seashores
- Increased damages to urban, agricultural, transportation, historical, archeological resources, from encroachment on flood-plains, highway construction, deforestation

Institutional

- Shortage of safe yields of Cape Fear headwaters for Guilford Co. may require transfers from Dan or Yadkin Basins

Financial

- Need for more than secondary treatment in many "water quality limited" areas to meet 1983 goals economically burdensome to local communities

Problem Area 304: Yadkin-Pee Dee River Basin Area (North Carolina)
ASR 0302, Category A

Water

- Headwater streamflow and ground water inadequate to meet present demands; additional interbasin transfers may be needed by 1990, impacting quality, power, F&WL, and other water uses
- Interrelated quality, quantity, management problems
- High degree of power regulation, urban expansion in headwaters impact on waste assimilation capacities of streams
- Quality degraded by inadequately treated M&I and mining wastes, urban and agricultural runoff, thermal pollution, sedimentation, affecting domestic supplies, recreation
- Pollution from upstream and local M&I sources degrading coastal waters of Grand Strand, closing shellfish areas, threatening wetlands, beaches, recreation, anadromous fish, commercial and sport fishing, boating
- Groundwater supplies along Fall Line high in iron, corrosives, low in

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE SOUTH ATLANTIC-
GULF REGION (3)

- pH, some saline pockets; questionable as economic supply
- Grand Strand supply limited to groundwater; demands could cause salt water intrusion; high TDS

Related Lands

- Lack of land use controls resulting in large-scale urbanization, floodplain development, drainage of wetlands, and saline imbalance of inland waters, impacts on F&WL, recreation, erosion and sedimentation, reduction of reservoir capacity and navigable depths downstream
- Competition between uses for land water
- Lack of proper management of mountain resources in NC
- Pronounced streambank erosion in lower Piedmont Province: maximum in lower Piedmont Province; maximum in Upper Coastal Plains, during high water
- Poor surface drainage restricts crop and forest production; remedy detrimental to F&WL
- Stream capacity reduced by logging debris, cutting of streambank vegetation; aggravating flooding
- Severe soil erosion, critical beach erosion
- Lack of controls on use of coastal resources by recreational development, channel and harbor dredging; impacting wetlands, environmental resources, F&WL habitat; increasing exposure to storms

Flooding

- 47 communities in NC, 44 inland and 4 coastal in SC, plus rural areas subject to flooding from stream and tidal flooding
- Lack of dam inspection law in SC; inadequate enforcement of 1967 NC Dam Safety Law for lack of resources

Problem Area 305a: Catawba-Broad-Saluda River Basins Area (South Carolina)
ASR 0302, Category A

Water

- Saluda low flows insufficient for growing industrial demands; transfers from Savannah River may be necessary but would jeopardize large needs on latter

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE SOUTH ATLANTIC-
GULF REGION (3)

- Quality degraded by large M&I, nonpoint wastes, erosion from agricultural, logging and construction operations, peaking power operation, affecting low flows, eutrophication of reservoirs, recreation, F&WL habitat

Related Lands

- Heavy soil erosion in Piedmont due to land use practices, construction; silting streams and reservoirs, reducing storage capacity for power; damaging aquatic life, floodplains
- Conflicts and competition over land use; lack of management policy, floodplain ordinances; uncontrolled development

Flooding

- Urban, industrial and agricultural damages in Saluda sub-basin; some shoreline flooding around private power reservoirs due to loss of storage

Problem Area 305b: Santee-Edisto River Basin Area (South Carolina)
ASR 0302, Category A

Water

- Groundwater levels in SE South Carolina falling due to heavy withdrawals in Savannah, Ga. area, posing supply problems for M&I uses, saltwater intrusion
- Groundwater along Fall Line high in iron, corrosives, low in pH; salt pockets; questionable supply for increased demands
- Pollution reaching coastal areas of Charleston and Beaufort Counties has caused closing of shellfish areas; depressed oxygen levels
- Rediversion of fresh water from Cooper R. to Santee R. will decrease salinity at mouth of latter, affecting shellfish in estuary; increase salinity in Cooper R. and in Charleston Harbor
- Pollution detrimental to recreational uses, marine life; nutrients aggravate serious aquatic weed problem
- Streamflows inadequate for surface supplies; diversions necessary from other basins (Edisto and Savannah Rivers), with management and legal impacts

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE SOUTH ATLANTIC-
GULF REGION (3)

Related Lands

- Lack of controls on development of coastal resources by recreational and industrial users, channel and harbor dredging; impacts on wetlands, environmental resources, F&WL habitat; increasing coastal exposure to storms

Problem Area 306: Savannah - Ogeechee River Basins (South Carolina, Georgia)
ASR 0303, Category A

Water

- Groundwater in coastal area falling due to heavy withdrawals in Savannah area, with resulting problems for M&I use, possible saltwater intrusion
- Large uses for hydropower, thermal plants, M&I users, consumptive losses, transfers to Saluda sub-basin and other communities in South Carolina, will reduce downstream flows for navigation and cooling
- Quality degraded by M&I, residual, thermal wastes; fishing restricted in Lake Hartwell due to chemical pollution

Problem Area 307: Altamaha - St. Marys River Basins (Georgia, Florida)
ASR 0303, Category A

Water

- Saltwater encroachment on groundwater supply in Brunswick, Ga., due to large withdrawals
- Shallow aquifer contaminated during rainy weather by septic tank effluents, preventing use by small domestic and industrial users
- High chlorides reduce usefulness of groundwater for many industries near Brunswick

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE SOUTH ATLANTIC-
GULF REGION (3)

Problem Area 308: St. Johns River Basin Area (Florida)
ASR 0304, Category A

Water

- Saltwater encroachment on groundwater supply in N.E. Florida due to large withdrawals
- Surface waters and low flows high in chlorides, not suitable as municipal supply
- Lake Washington, in headwaters, inadequate during droughts for agriculture and South Brevard Co.; competition with industry
- Surface quality degraded by agricultural and urban runoff, low flows, M&I wastes, eutrophication of lakes and organic deposits on bottoms; destructive of natural aspects of basin
- Groundwater degraded by salt springs, upward leakage of highly mineralized waters from deep artesian zones, heavy pumping for irrigation; threat of saltwater encroachment in Jacksonville and areas to north
- Estuarine lagoons, rivers, waterways degraded by sewage effluent, industrial wastes, cooling water, urban runoff, and agricultural, construction and dredging activities; flushing hampered by low runoff, causeways, dredging, filling, bulkheading
- Degradation of coastal waters threatens recreational uses of beaches, reduces aquatic life & habitat, closes shellfish areas

Related Lands

- Beach erosion reducing utility for resorts and swimming; restoration expensive; public access difficult due to private ownership

Flooding

- Hurricane storms cause flood damages in low coastal and riverine areas; agricultural and low density urban damages in upper basin; hazards increased by overflow of poorly defined drainage divides

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE SOUTH ATLANTIC-
GULF REGION (3)

Problem Area 309: South Florida Area
ASR 0305, Category A

Water

- Urbanization of SE Florida coast, construction of impervious surface over recharge areas, increased municipal and agricultural pumping, lack of control of surface water flowing to Gulf, producing critical water shortage
- Heavy pumping in Polk Co., uncontrolled drainage canals in Miami area, lowering groundwater and affecting surface flows; saltwater intrusion in Biscayne aquifer; lack of controls threatening major contamination
- Quality degraded by agricultural and urban runoff, waste residuals, increasing nutrients and eutrophication of lakes, sanitary landfill drainage, thermal pollution, septic tank effluents
- Saline contamination of freshwater reach of Caloosahatchee River (Ft. Myers' supply) and surface and ground supplies in Lee, Hendry, Charlotte and Collier Cos.
- Excessive weed growth due to nutrients, clogging streams, lakes and ponds, inhibiting boat travel, recreational use, damaging aquatic habitat

Related Lands

- Beach erosion reducing utility for resorts and swimming; restoration expensive; public access difficult due to private ownership

Flooding

- Hurricane-generated floods aggravated by low elevation of entire area, low relief, slow runoff, limited pump capacities, damaging densely developed SE coast and extensive agricultural lands
- Continued flooding and poor drainage damage urban, industrial, agricultural uses, cause health hazards, degrade deer habitat in conservation areas

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE SOUTH ATLANTIC-
GULF REGION (3)

Problem Area 310: Southwest Florida Area
ASR 0304, Category A

Water

- Low dependable streamflows in Tampa-St. Petersburg area; large demands and heavy withdrawals for M&I uses
- Shallow aquifer south of Tampa contaminated by wells penetrating mineralized Floridan aquifer
- Floridan aquifer falling in Polk and Hillsborough Cos. due to heavy pumping by municipalities, industries (phosphate mining), and agriculture
- Saltwater intrusion in coastal areas
- Surface quality degraded by M&I wastes, urban runoff, non-point sources, nutrients from agricultural activities; lowering assimilative capacity during droughts; increasing weed growth and organic accumulations in streams and lakes
- Sub-standard DO in Withlacoochee River, Tampa Bay-Hillsborough River
- Closing of shellfish harvesting due to bacterial pollution from Glades and Charlotte Cos.

Related Lands

- Erosion of coastal beaches reducing resort and swimming usefulness; restoration expensive; public access difficult due to private ownership
- Land subsidence and collapse in moist areas

Flooding

- Low-lying beaches and developed coastal area (Tampa - St. Petersburg; Lee - Charlotte Cos.) subject to heavy damage by tidal flooding
- Significant danger to downstream urban populations and property in Four Rivers Basins (Hillsborough, Oklawah, Withlacoochee, Peace Rivers) from heavy rains in headwaters (Green Swamp)

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE SOUTH ATLANTIC-
GULF REGION (3)

Problem Area 311: Suwannee River Basin (Georgia, Florida)
ASR 0304, Category A

Water

- Heavy groundwater pumping for M&I, irrigation in limestone sinkhole areas may result in subsidence, entrance of contamination; problem extent not well known, use limitations not defined
- Transfers of groundwater out of basin would deprive downstream users, affect natural beauty of basin
- Surface quality of Suwannee, and Withlacoochee (major tributary), degraded by agricultural and urban runoff, M&I wastes, phosphate mining (fine silt), drainage from Okefenokee Swamp in headwaters affecting domestic use, stream biota, fish
- Damage to aquatic life by breakage of silt dams
- Value as rare and unique river damaged by loss of aesthetic water quality

Related Lands

- Lack of land use controls, resolution of governmental jurisdictions threatens F&WL habitat, irreplaceable natural and recreational resources
- Phosphate mining in Osceola National Forest could damage hardwood ecosystem and wildlife habitat

Problem Area 312/313: Apalachicola, Chattahoochee, Flint River Basins
Area (Florida, Georgia, Alabama)
ASR 0306, Category A

Water

- Minimum flows of Chattahoochee R. and from Lake Lanier almost fully utilized for expanding Atlanta SMSA; reservoir operation changes or major transfers from other basins (interstate) may be needed for additional supplies; smaller jurisdictions reaching supply limits
- M&I and other users, Upper Flint Basin, south of Atlanta, cannot depend

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE SOUTH ATLANTIC-
GULF REGION (3)

- on limited groundwater or low surface flows in area; larger more distant streams of questionable quality
- Groundwater levels appear to be declining from Albany to Americus due to heavy pumping for M&I, irrigation uses; potential effect on economic development; threat of subsidence
 - Flows in Apalachicola below Jim Woodruff Dam inadequate for satisfactory maintenance of authorized 9-foot navigation depth; effects of consumptive uses, reservoir evaporation, also on environment
 - Quality of Chattahoochee, South, Flint Rs. below Atlanta degraded by M&I wastes, combined sewer overflows, non-point sources; dry weather flows mostly treated effluents
 - Lower Chattahoochee and tributaries degraded by M&I wastes (Columbus-Phenix City), forest clear-cutting, erosion, sediment, turbidity due to land and construction practices; causing reservoir silting and eutrophication
 - Groundwater aquifers in SW Georgia contaminated by surface flows into limestone sinks; septic tank drainage, municipal landfill; deep aquifers used by Albany, Ga., Quincy, Fla., contain high chlorides; shallow aquifers also contaminated by poorly constructed water wells, agricultural chemical infiltration

Related Lands

- Erosion of coastal beaches reducing resort and swimming usefulness; restoration expensive; public access difficult due to private ownership
- Sheet, gully, streambank, lakeshore, roadside erosion throughout area, except in coastal uplands, due to agricultural and construction activities; affects productivity, sedimentation of streams and lakes, reservoir capacities

Flooding

- Damages continuing in urban areas, tributary streams in Flint basin; small streams in Atlanta; aggravated by continued floodplain development

Institutional

- Conflicts over and lack of interstate agreements on competitive land and water uses for urban development, recreation, power, navigation, environmental impacts, designation of wild and scenic rivers, costs, flood plain management, endangered species habitat, surface and groundwater management
- Three levels of government, many jurisdictions involved in decisions on management of water resources in Atlanta SMSA; need for resolution of

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE SOUTH ATLANTIC-
GULF REGION (3)

conflicts on management, allocation, legal clarification of water
rights, inter-basin transfers

Problem Area 314: Choctawhatchee-Perdido River Basins Area (Florida,
Alabama)
ASR 0307, Category A

Related Lands

- Erosion of coastal beaches reducing resort and recreational usefulness;
restoration expensive; access difficult due to private ownership
- Serious gully, sheet, rill erosion, affected by construction activities;
destroying croplands, stream capacity, aquatic life and habitat,
degrading water quality, increasing flooding

Financial

- Individual land owners, State and local governments unable to finance
share of corrective measures

Problem Area 315: Alabama-Coosa River Basin Area (Georgia, Alabama)
ASR 0307, Category A

Water

- quality degraded by M&I residual wastes (carpet industry at Dalton),
agricultural and urban runoff, sediment from sand & gravel operations
and land erosion, minimum releases during power plant shutdowns;
affecting assimilative capacity, fish life
- Net loss in Etowah River by transfers to Atlanta system in Alabama-Coosa
Basin
- Net loss in Cahaba Basin to Birmingham supply
- Low flows on Coosawattee below Rome insufficient for waste assimilation;
will be further affected by pumped-back storage at Carters Dam
- Low flows insufficient, groundwater uneconomical for industry at Dalton

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE SOUTH ATLANTIC-
GULF REGION (3)

Flooding

- Increased costs of water treatment, damages to supplies, wild & scenic rivers, natural areas, wetlands & wildlife habitat from sediment, barge traffic operations, recreational and boating activities, structures, roads, bridges, pastures, croplands, navigation channels

Problem Area 316a: Tombigbee River Basin Area (Mississippi, Alabama)
ASR 0308, Category A

Water

- Extremely low dry weather flows, lack of storage sites, high treatment costs, favor groundwater supplies, also limited and of poor quality in some areas; demand will increase after completion of Tennessee-Tombigbee Waterway
- Groundwater quality degraded by high iron, fluorides, hydrogen sulfide, hardness, salt water in deep coastal aquifers, requiring treatment; Tenn-Tom W/W expected to lower water table near channel
- Lack of water transportation between interior and Gulf restricting industrial development; completion of Tenn-Tom W/W will change stream flows, affect water quality and environment

Related Lands

- Extensive erosion from agricultural use, strip mining and construction activities, downstream sedimentation

Flooding

- Increased water treatment costs; damages to wild and scenic river options, wetlands and wildlife habitat from sediment, recreation and boating, roads, bridges, pastures, croplands, structures, navigation channels, reservoir capacity, streambanks; restriction of barge traffic

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE SOUTH ATLANTIC-
GULF REGION (3)

Problem Area 316b: Black Warrior River Basin (Alabama)
ASR 0308, Category A

Water

- Shortage of surface supplies, aggravated by low flows and consumption, for expanding M&I uses, assimilation of M&I, mine dewatering, and non-point wastes, inter-basin transfers, in conflict with in-stream needs for navigation, power, fish, recreation, particularly in Cahaba Basin
- Conflicts between navigation and existing and potential industrial uses; efficiency vs. environmental impacts
- Tributary quality and main stem degraded by M&I, mining wastes, heavy nutrient loads; quality standards violated during low flows
- Series of impoundments between Birmingham and mouth reduce stream velocities, flows, DO, and natural assimilative capacities
- Quality affected by de-watering of limestone mines, sedimentation, acid mine drainage, damaging reservoir capacities, navigation channel depths, benthic organisms, stream biota, water supplies, commerce, boating, recreation, fisheries

Related Lands

- Erosion of strip mine and spoil areas, and by construction activities, agricultural, forest practices, causing sedimentation of streams, reducing flood-carrying reservoir capacities, navigation channel depths and storage

Problem Area 316c: Mobile & Lower Tombigbee River Basin Area (Alabama)
ASR 0308, Category A

Water

- Mobile competes with Pascagoula for M&I supplies from interstate Escatawba R., supplying downstream areas in Mississippi; groundwater not dependable because of saline encroachment
- Heavily utilized groundwater aquifers affected by highly mineralized water from below; little or no potable groundwater from west-central

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE SOUTH ATLANTIC-
GULF REGION (3)

- Alabama into Miss.; potential contamination from oil & gas drilling, deep-well injection of liquid wastes in coastal plains
- Surface supplies subject to saline pollution, not suitable M&I supply
 - Port facilities and channel depths insufficient for expanding navigation needs
 - Marine & estuarine quality degraded by M&I wastes from lower Mobile R., thermal discharges into Bay, low DO, toxic wastes, harming shellfish & other fisheries

Related Lands

- Erosion of streambanks and beaches caused by riverine and tidal flows, producing sedimentation of navigable channels and bay areas, damaging shellfish & fisheries habitat in estuarine areas
- Gully, sheet, rill erosion in Clarke Co.
- Damage to Gulf beaches, shorelines, recreational areas, structures, from tropical storm winds and waves
- Conflicts between industrial development (and future traffic to interior via Mobile Bay and Tenn-Tom W/W) with recreation, commercial fishing, shellfish harvesting, F&WL habitat, protection of scenic and other resources
- Disposal of dredged materials from navigation areas
- Dredging & filling of low areas for industrial sites, destroys wetlands, F&WL habitat
- Increase in flood damages from development of low areas

Problem Area 317: Pascagoula River Basin (Mississippi)
ASR 0309, Category A

Water

- Insufficient surface low flows to supply Laurel and Hattiesburg, and to assimilate residual and non-point pollution
- Competition for surface waters in coastal Jackson and other counties for M&I and cooling uses
- Groundwater in some coastal areas of questionable quality
- Lack of freshwater lakes, and variable stream flow hinder recreation
- Pascagoula and Escatawpa estuaries degraded by M&I wastes, urban and agricultural runoff, lack of flushing due to low flows and tidal action, threatening shellfish harvest and recreational use of beaches along coast

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE SOUTH ATLANTIC-
GULF REGION (3)

- Abundant groundwater, degraded in places by injection of oil brines, possible lateral saline migration due to heavy pumping, and other wastes, could be rendered unsuitable for municipal use
- Increased groundwater withdrawals could cause subsidence in coastal areas

Related Lands

- Drainage of wet and marginal lands for development causing loss of F&WL habitat
- Lack of land use control jeopardizing habitat of Sand Hill crane in Pascagoula area; lack of floodplain, coastal controls

Flooding

- Unwise development of floodplains increasing agricultural and urban flood damage potential, especially during hurricanes along coastal beaches
- Homes, farms, and highways damaged (1974 flood caused widespread flooding in Hattiesburg, Laurel; evacuation, loss of life)

Institutional

- Interstate agreement needed for proposed transfer from Escatawba River to Mobile

Financial

- Local governments unable to finance major projects or corrections, must depend on State and Federal aid

Problem Area 318: Pearl River Basin Area (Mississippi, Louisiana)
ASR 0309, Category A

Water

- Jackson supply (Ross Barnett Reservoir) affected by nutrients and large areas of aquatic weed growths; Pelahatchie Creek arm polluted by industrial wastes; chemical control of weeds would affect quality for use

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE SOUTH ATLANTIC-
GULF REGION (3)

- Quality below Jackson degraded by M&I wastes, urban and non-urban runoff, septic tank seepage, low flows
- Estuary and marine waters degraded by M&I wastes, urban and agricultural runoff, lack of flushing, threatening shellfish and recreational uses

Flooding

- High flood risks from hurricane and frontal storms in urban areas; Jackson, Mendenhall, McComb, Columbia, Picayune, Bogalusa

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE GREAT LAKES
BASIN REGION (4)

Problem Area 1: Superior Slope Complex (Minnesota)
ASR 0401, Category A

Water

- High Lake Superior levels cause shore erosion and property damage
- Taconite tailings (and asbestiform fibercontent) may adversely affect public water supplies and health increase lake turbidity, and harm fish life
- Insufficient recreational harbors of refuge

Related Lands

- Growth of permanent and seasonal housing along lake and on inland lakes conflicts with environmental, social and recreational amenities, & shoreline preservation

Institutional

- Litigation and controversy over Reserve Mining disposal of taconite tailings in lake involve complex economic, social and environmental issues
- Regulation of Lake Superior for damage reduction on lower lakes involves local, State, Federal and international jurisdictions

Problem Area 2: Saint Louis River Basin and Duluth-Superior Area
(Minnesota, Wisconsin)
ASR 0401, Category A

Water

- River quality and oxygen content degraded by M&I wastes, discharges from vessels, urban runoff
- Adjacent Lake Superior affected by Reserve Mining taconite deposits
- Public supplies degraded by turbidity, color, taste, odor, asbestos from taconite mining; unknown health hazards
- Improvements for navigation and disposal of dredged materials

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE GREAT LAKES
BASIN REGION (4)

- Fish and other aquatic species, recreation, damaged by low flows, low dissolved oxygen, dredged material disposal

Related Lands

- Large quantities of sediment from red clay areas eroding in NW Wisconsin
- Residential and second home development encroachment on wetlands, flood plains, and creek headwaters
- Drainage of wetlands damaging natural resources and hydrologic regimen
- Development and consumptive water use incompatible with scenic rivers objective

Flooding

- Rural and urban flooding from stream overflow and fluctuating lake levels

Institutional

- Arrangements and policies on land use and water quality ineffective because of lack of funding incentives, coordination, enforcement, public awareness
- Conflicts between Federal and State standards and policies on dredging and disposal

Problem Area 4: Michigan's Upper Peninsula (Lakes Superior and Huron Drainage)
ASR 0401, Category A

Water

- Surface and ground water quality degraded by turbidity and discoloration, due to M&I and ship discharges, leachates from solid waste disposal sites, dredged materials, and natural sources, affecting health, recreation, and F&WL
- Shortage of suitable and available ground water resources, particularly in urban areas, and for power and open pit mining
- Navigable depths reduced and commerce impeded by low lake levels

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE GREAT LAKES
BASIN REGION (4)

Related Lands

- Streambank and shoreline erosion due in part to high lake levels, winter navigation, recreation, logging, mining, flood plain development
- Need for preservation and protection of remaining wetlands for water regulation, recreation, F&WL habitat
- Inadequate supervision of solid waste disposal sites
- Lack of land use controls causing loss of wild, natural, or scenic lands
- Cave-ins of abandoned mine shafts causing property, sewer and water line damages, increasing water quality problems
- Lack of access to shoreline restricting lake recreation potential

Flooding

- Urban and rural damages due to high lake levels, ice jams below hydro plant on St. Mary's River, flood plain encroachment

Institutional

- Public and private conflicts over land use, water, environmental protection

Problem Area 8: Southeast Wisconsin Complex
ASR 0403, Category A

Water

- Deep aquifer levels declining in Milwaukee area; natural saline waters intruding in NE counties
- Quality of streams and lakes degraded by M&I discharges, rural and urban runoff, combined sewer overflows affecting F&WL habitat, M&I supplies, shift to Lake Michigan for industrial water supplies
- Eleven lakes affected by weeds, algae, winterkill; seven, eutrophic
- Navigable depths inadequate for commerce

Related Lands

- Milwaukee expansion causing land use conflicts, impacts on water quality, flooding, erosion
- Erosion from construction silting streams and lake

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE GREAT LAKES
BASIN REGION (4)

Flooding

- Damages increasing for lack of land use controls and ordinances

Institutional

- Arrangements for correcting problems often ineffective for lack of funding incentives, coordination, enforcement, public awareness

Problem Area 9: Chicago-Indiana Complex (Illinois, Indiana)
ASR 0403, Category A

Water

- Quality of inland waters, particularly during low flows, degraded by floating debris from industry, oil, discoloration, suspended solids, inadequately treated M&I wastes, dredging and disposal; affecting supplies, health, fish, recreation, aesthetics
- Areas and facilities for recreation limited on inland waters
- Ground water usage in Chicago area exceeding aquifer recharge capability

Related Lands

- Industrial and residential expansion conflicting with preservation of natural, wetland, and recreational areas
- Shoreline properties damaged by high Lake Michigan levels

Flooding

- Damages from urban expansion on flood plains

Institutional

- Arrangements for correction of problems often not effective for lack of funding incentives, coordination, enforcement, public awareness
- Limitations on use of Lake Michigan as water supply for Chicago metropolitan area

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE GREAT LAKES
BASIN REGION (4)

Financial

- Financing and programs inadequate to protect recreational, environmental, and agricultural resources from urban sprawl

Problem Area 11: Kalamazoo, Black, Macatawa, Paw Paw Rivers Basin
(Michigan)
ASR 0404, Category A

Water

- Quality degraded by M&I discharges, malfunctioning septic systems, fertilizers, pesticides, urban runoff, dredging, affecting recreation, aquatic habitats, aesthetics
- Ground water in Ottawa Co. affected by high mineral content and improper use of septic systems
- Lake Michigan quality impacted by dredging and disposal

Related Lands

- Development of flood plains increasing damages and destroying environmental and storage values
- Erosion of croplands, streambanks, urban construction sites, silting watercourses
- Land use changes impacting prime agricultural and recreational lands

Flooding

- Significant urban damages

Institutional

- Lack of adequate land use planning permitting uncontrolled growth and development

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE GREAT LAKES
BASIN REGION (4)

Problem Area 13: Northern Lower Peninsula (Michigan)
ASR 0405, Category A

Water

- Quality impaired by municipal discharges, septic systems, agricultural runoff, wetland loss, affecting fish habitat, potable supplies, recreation
- Ground water contaminated by abandoned oil wells, natural minerals, septic systems

Related Lands

- Urban and resort developments threaten wildlife habitat, agricultural land, nature areas
- Oil and gas exploration and drilling threaten environmental damage
- Lake Michigan sand dunes damaged by sand and gravel mining and all-terrain vehicles
- Property damages from lake shore erosion

Institutional

- Sound land use policy and controls inadequate to base decisions on land capability

Financial

- Federal and State funding needed for acquisition of natural, scenic, open space, and wetland areas

Problem Area 15: Saginaw Bay-Thumb Complex (Michigan)
ASR 0405, Category A

Water

- Quality degraded by partially treated sewage effluents, nutrients, rural

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE GREAT LAKES
BASIN REGION (4)

drainage and septic tank discharges, low dissolved oxygen, affecting flows into Bay, waters supplies, recreation, public health

- High mineral content reduces potability of ground water supplies
- Thermal power plants impact nearshore environment of Lake Huron
- Oil and chemical spills degrade F&WL mortality, flavor, food chain
- Turbidity and deposition of sediment and dredged material impact on water quality and aquatic environment

Related Lands

- Disposal of polluted dredged materials may require confinement
- Private developments and agriculture detract from values of and preempt shorelands, flood plains, wetlands, upland wildlife habitat
- Wetlands alterations impair functions of water regulation, habitat, shoreland buffers
- Environmental values of wetlands impaired by marina development
- Sedimentation of Bay and coastal marshes impacting on F&WL habitat and populations

Flooding

- Agricultural damages

Financial

- Federal and State funding inadequate for acquisition of natural, scenic, wetland and open space areas

Problem Area 16: Detroit Metropolitan Area (Michigan)
ASR 0406, Category A

Water

- Quality degraded by non-point sources, industrial discharges, combined sewer overflows, inadequate assimilative capacity of streams, causing health problems, limiting municipal and recreational use, destroying aquatic habitat
- Pollution of Detroit River and Lake St. Clair by M&I wastes limits fishery value, wildlife habitat, recreation uses, and poses health problems
- Insufficient water surface and facilities for water-based recreation

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE GREAT LAKES
BASIN REGION (4)

- Disruption of aquatic habitat by dredging, and impacts of disposal on circulation in Great Lakes

Related Lands

- filling of, and dredged material disposal on, shore marshes threatens F&WL habitat, destroys natural areas and open space, may alter water quality and quantity in Great Lakes
- Inadequate drainage limits urban and agricultural land use and contributes to flooding
- Erosion, caused partly by urbanization, causes soil loss, sedimentation, contributes nutrients and pesticides, degrades water quality

Flooding

- Urban damages attributable to flood plain development, high lake levels, ice jams

Institutional

- Conflict between Canada and United States on appropriate management of St. Clair River Delta Islands

Problem Area 18: Maumee River Basin (Ohio)
ASR 0406, Category A

Water

- Quality of River, Bay and tributaries degraded by agricultural and M&I wastes, combined sewer overflows, mining activities, sedimentation, septic tank leachates, affecting public health, food processing, water supplies, aquatic habitat, species diversity, aesthetic values, recreational potential
- Fluctuating flows restrict local supplies and urban growth
- Ground water taste and odor limit potable use
- Power plant and confined disposal sites affect bay circulation, recreational opportunities, F&WL habitats
- Toledo harbor and channel maintenance dredging and disposal affect water quality and aquatic habitat

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE GREAT LAKES
BASIN REGION (4)

- Inadequate water surface for recreation demands
- Causeway construction may affect environment and circulation of Bay, water quality, habitat and aesthetics

Related Lands

- Severe shore erosion of Bay and of river banks causes sedimentation and property damages
- Wetlands erosion and filling adverse to F&WL habitat, water quality, flooding, open space, buffer against waves

Flooding

- Urban and rural damages due to development, rapid runoff, inadequate channel capacity

Problem Area 19: Ohio Lake Plains (between Toledo and Cleveland)
ASR 0406, Category A

Water

- Stream quality degraded by poorly treated waste waters, storm sewer discharges, agricultural runoff, erosion and sedimentation, affecting domestic and recreational use, and limiting sport and commercial fishing
- Lake Erie quality degraded by ineffective M&I wastewater treatment, excessive urban, industrial and agricultural runoff, affecting health, domestic and recreational use, sport and commercial fishing
- Groundwater supply contaminated by natural high mineral content, pollution from private and municipal sewage disposal wells, limiting domestic use
- Maintenance dredging for navigation causes turbidity, smothers benthic organisms, reduces recreational opportunities and aquatic habitats

Related Lands

- Channelization controversial because of loss of natural characteristics of streams
- Shoreline and streambank erosion causing property damage, sedimentation, pollution, loss of fish habitat

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE GREAT LAKES
BASIN REGION (4)

- Lack of public access to water restricts fishing and hunting opportunities

Flooding

- Crop, commercial, and residential damages
-

Problem Area 20: Cleveland-Akron Metropolitan Area (Rocky-Cuyahoga-Chagrin River Basins) (Ohio)
ASR 0407, Category A

Water

- Quality of Lake Erie and tributaries degraded by M&I wastes, combined sewer overflows, rural and urban runoff, sedimentation restricting domestic and recreational use, destroying F&WL habitat and more desirable species, and increasing cost of water supply treatment
- Municipal needs and demands overtaking groundwater capacity
- Near-shore quality in Lake Erie limits recreational use

Related Lands

- Critical erosion of Lake Erie shores
- Inadequate drainage limits agricultural and urban use; excessive drainage destroys wetland functions
- Inland water-based recreation limited by urban preemption of land, insufficient facilities, poor water quality

Flooding

- Residential, commercial and crop damages on tributaries

Institutional

- Ground water and shoreline management policies needed

Financial

- Adequate financing needed for municipal treatment and water supply facilities

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE GREAT LAKES
BASIN REGION (4)

Problem Area 23: Erie-Niagara Region (New York)
ASR 0407, Category A

Water

- Fluctuating lake levels impact on commercial navigation, hydropower production, shoreline erosion and flooding, F&WL habitat
- Quality of lake and tributaries degraded by M&I wastes, polluted dredged material, land runoff, affecting public health, aquatic habitat, recreation and aesthetics

Related Lands

- Adverse impacts of dredging and disposal on environment, habitats, recreational opportunities, and wetland areas
- Urban-industrial and transportation use of land conflicts with access to shoreline and recreational areas and with other potential uses
- Shoreline erosion and damages from high lake levels and ice jams

Flooding

- Stream overflow damages urban and rural flood plain developments

Institutional

- Coordination handicapped by overlap and confusion of jurisdictional control regulations
- Lack of enforceable control regulations and funding for non-point source pollution abatement

Financial

- Inadequate funding for wastewater treatment facilities, and for acquisition of natural, scenic, wet, and open space lands

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE GREAT LAKES
BASIN REGION (4)

Problem Area 26: Greater Finger Lakes-Oswego River Basin (New York)
ASR 0408, Category A

Water

- Quality degraded by inadequate M&I treatment, land runoff, chemical discharges, sedimentation, limiting swimming and fishing, polluting public water supplies (Oneida Lake), causing loss of F&WL habitat and eutrophication
- Proposed use of lakes for cooling by and heat sink for thermal power plants may degrade water quality
- Major uncontrolled changes of lake levels would be detrimental to wildlife and habitat
- Dredging and disposal may re-suspend toxic materials, smother benthic organisms, temporarily increase turbidity, and harm F&WL habitat

Related Lands

- Bank erosion causes urban property damage
- Recreational, urban and agricultural land uses conflict with natural values and environmental preservation, and may increase costs of latter
- Some suitable water resources are inaccessible for public recreation
- Loss of wetlands decreases habitat, open space, regulatory capability

Flooding

- Damages to urban and rural uses of flood plains

Institutional

- Coordinated management program lacking for optimum control of lake levels and flows

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE GREAT LAKES
BASIN REGION (4)

Financial

- Inadequate Federal and State funding for acquisition of natural, scenic, wet, open space, and recreational lands

Problem Area 27: Lake Ontario, Lake Plains (New York)
ASR 0408, Category A

Water

- Extreme low flows in Niagara County tributaries limit capacity to assimilate wastes
- Stream quality degraded by inadequate M&I waste treatment, causing algae blooms, health hazards, poor aesthetics, closing of beaches, and limiting recreation and fishing
- Shoreline and embayment waters locally degraded by intense shoreline development

Related Lands

- Erosion and sedimentation inhibiting use of water, causing property damage, degrading water quality, limiting recreation and fishing, and creating need to dredge New York State Barge Canal

Institutional

- Lack of coordination among involved agencies due to overlap and confusion on jurisdictional control over resources

Financial

- Inadequate Federal and State funding for waste treatment plants, and for acquisition of natural, scenic, wet, and open space lands

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE GREAT LAKES
BASIN REGION (4)

Problem Area 28: Black River-St. Lawrence Complex (New York)
ASR 0408, Category A

Water

- Quality degraded by M&I wastes, septic tanks, nutrients
- Past minor and future potential major oil spills in St. Lawrence River
- Out-of-basin diversions (Black River) a major future concern if predicted growth of hydropower, recreational, and agricultural demands occur
- Large-scale thermal power plants may raise thermal and aesthetic pollution, radiation hazards, and impede access to river
- Year-round large-scale commercial navigation of St. Lawrence Seaway raises concerns on adverse environmental impacts
- Extreme low flows on inland streams impair aesthetics, boating, F&WL habitat, water quality

Related Lands

- Substantial wetland reduction occurring
- Poor drainage conditions reduce crop production
- Land use conflicts have resulted in loss of wetlands and natural and scenic areas

Flooding

- Significant flood damages to flood plain developments, pastures, croplands

Institutional

- Inadequate Federal and State funding for acquisition of natural, scenic, wet, and open space lands

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE OHIO RIVER BASIN REGION (5)

Problem Area 1: Allegheny River Basin (New York, Pennsylvania)
ASR 0501, Category A

Water

- Quality degraded by M&I wastes, acid mine drainage; seriously limits F&WL habitat and recreational use
- Pollution affects many streams in wild and scenic state
- Appreciable increased supply requirements for public, industrial, power, and other uses projected throughout area
- Water surface lacking for recreation, particularly in Pittsburgh area

Related Lands

- Erosion and sediment problems from abandoned strip mines (4 million acres need treatment and management), sand excavation and removal from streams, affect F&WL habitat and channel carrying capacity
- Conflicts on balanced urban growth and use of land on fringes of basin

Flooding

- Large annual damages (\$51 million/year), 90 percent of which is urban

Problem Area 2: Mahoning River Basin (Ohio)
ASR 0502, Category A

Water

- Quality degraded by M&I wastes, acid mine drainage, non-point sources; lower 27 miles severely polluted, particularly by steel mills
- Some supply and facility problems

Related Lands

- Significant need for water and land-based recreation facilities in Warren and Trumbull Counties

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE OHIO RIVER BASIN REGION (5)

Flooding

- Approximately 10 percent of projected damages will not be prevented by existing and underway damage abatement projects

Problem Area 3: Upper Ohio River Main Stem Basin (excl. Mahoning)
(Ohio, Pennsylvania, West Virginia)
ASR 0502, Category A

Water

- Quality of main stem and tributaries degraded by M&I wastes, mine drainage, non-point sources
- Energy demands for water may impact on M&I use on main stem
- Projected boating and fishing demands to year 2000 require over 70,000 additional acres of water surface

Related Lands

- Current camping demand exceeds supply by almost 5,000 acres

Flooding

- Urban and other damages of about \$18 million annually will not be affected by existing and underway damage abatement projects

Problem Area 5: Muskingum River Basin (Ohio)
ASR 0503, Category A

Water

- Quality degraded by M&I wastes, mine drainage, non-point sources
- Rural groundwater supplies inadequate in parts of SE basin, requiring cistern, pond or small community developments

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE OHIO RIVER BASIN REGION (5)

Problem Area 6: New River Basin (Kanawha Basin) (West Virginia,
Virginia, North Carolina)
ASR 0504, Category A

Water

- Coal mine drainage the most significant non-point contributor of
pollution (197 miles polluted)
 - Groundwater degraded in some areas by naturally upward migrating brines
 - Several communities will experience water supply problems by 1980
 - Shortage of water surface for recreation
-

Problem Area 7: Kanawha River Basin (Bluestone Reservoir to Mouth) (West
Virginia)
ASR 0504, Category A

Water

- Quality degraded by municipal sewage (30 percent with no treatment),
industrial wastes, coal mine drainage, oil, gas and brine field wastes,
erosion and sedimentation
- Groundwater degraded in some areas by naturally upward migrating brines
- Navigation system increasingly unable to handle increasing traffic

Flooding

- Residual damages, mostly urban, average about \$14 million annually

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE OHIO RIVER BASIN REGION (5)

Problem Area 9: Middle Ohio River Main Stem Basin (Indiana, Kentucky,
Ohio, West Virginia)
ASR 0502, Category A

Water

- Quality degraded by M&I and domestic wastes, acid mine drainage, urban runoff, combined sewer overflows, and non-point sources
- Additional 154,100 acres of water surface needed to meet 1990 projections for waterbased recreation

Flooding

- Residual average annual urban and rural damages of about \$17 million (about 70 percent of current potential) would remain after completion of plans recommended in draft Main Stem Level B Study
-

Problem Area 10: Scioto River Basin (Ohio)
ASR 0503, Category A

Water

- Largest water quality problem in reach below Columbus, due to population and low summer flows
- Forty-two of 87 municipal supply systems not adequate for needs, but only 19 require additional supply sources
- Major recreational needs in Columbus (central) while facilities are in southern portion and Delaware County

Flooding

- Residual average annual urban and rural damages of \$6 million in 1965

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE OHIO RIVER BASIN REGION (5)

Problem Area 11: Great Miami River Basin (Ohio, Indiana)
ASR 0503, Category A

Water

- Quality degraded by M&I wastes, thermal pollution
 - Lack of water-based recreation facilities in upper reaches
-

Problem Area 12: Licking River Basin (Kentucky)
ASR 0505, Category A

Water

- Eleven of 40 segments in "effluent limited" class; remainder in "water quality limited" class, many because of zero or near zero flows
 - Surface water, primary source of water supplies, has poor low flow characteristics
 - Water-oriented recreational needs in downstream portion near Cincinnati
-

Problem Area 13: Kentucky River Basin (Kentucky)
ASR 0505, Category A

Water

- Quality degraded by M&I wastes and acid mine drainage
- Flows in small streams unable to assimilate effluents even after secondary treatment
- Low streamflows inadequate for water supply
- Whitesburg lacks storage; quality affected by sediment and organic pollution
- Commercial barging obsolete because of six-foot depth; confined to sand and gravel above Frankfort

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE OHIO RIVER BASIN REGION (5)

Flooding

- City of Hazard only unprotected urban area with severe flooding
- Residual urban and rural damages of \$2 million projected to \$4 million in year 2000

Problem Area 14: Wabash River Basin (Ohio, Indiana, Illinois)
ASR 0506, Category A

Water

- Quality degraded by M&I wastes, mine drainage, oil and natural gas production, erosion and sedimentation, thermal pollution
- Inadequate supplies for consumptive use of potential coal conversion plants
- Supplies for growing urban, industrial, and rural uses, and many small communities
- Large increased needs in land and water surface anticipated for recreational demands
- Potential conflicts of proposed navigation and dredging with environmental resources

Related Lands

- Conflicts between scenic river preservation and development
- Local recreational day-use a major need

Flooding

- Average annual urban and rural damages currently approximate \$87 million

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE OHIO RIVER BASIN REGION (5)

Problem Area 15: Lower Ohio River Main Stem (Illinois, Indiana, Kentucky)
ASR 0505, Category A

Water

- Quality degraded by M&I wastes, acid mine drainage, high sediment loads, agricultural runoff
- Sources of supply questionable for Shepherdsville and Hardinsburg, KY

Related Lands

- Loss of land by erosion becoming important
- 200-900 acres for campsites needed

Flooding

- Current average annual urban and rural damages approximate \$21.2 million
-

Problem Area 18: Cumberland River Basin (Kentucky, Tennessee)
ASR 0507, Category A

Water

- Quality degraded by M&I wastes, acid mine drainage, thermal pollution from power and some industrial plants, erosion and sedimentation, turbidity, oil and chemical spills in lower river
- Small tributaries degraded by acid drainage from abandoned mines
- Groundwater polluted by contact in active and inactive underground mines, and in large strip mine areas which have not been reclaimed
- Number of communities with supply problems projected to increase
- Impacts of Tennessee-Tombigbee Waterway on Cumberland River traffic and port and lock facilities, due to diversion of water and commerce

Flooding

- Residual damages after project completion about \$6.5 million, about half urban (greater part in Nashville)

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE OHIO RIVER BASIN REGION (5)

- Large potential hazards downstream of existing flood control structures because of high level of floodplain development
- Potential conflicts between navigation and environmental preservation

Related Lands

- Deficit in recreation areas by 1980, especially in Upper Cumberland

Institutional

- Conflicts between Federal and State agencies on stream dredging, and scenic rivers versus structural development

Problem Area 19: Mine Drainage, Ohio River Basin
Region-wide, Category A

Water

- Acid mine drainage degrades water for use by:
 - Industries: food processing, paper, chemicals, textiles, primary metals, stone and glass
 - Municipal supplies, depending on range of quality considered acceptable, need to develop alternative sources, effect on groundwater supplies, elimination of streams as viable potable source (Clarion River)
 - Navigation: reduces life of equipment from 40 to 25 years; channel sedimentation from strip mine areas
 - Recreation and ecology: burning eyes, dead fish, loss of plant viability, destruction of aquatic life, erosion and sedimentation, prevention of recreational use

Related Lands

- About 8 percent of basin land area of the 11 states in Ohio River Basin used for mining (1.9 million acres, of which 54 percent (one million acres) has been reclaimed)

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE OHIO RIVER BASIN REGION (5)

Problem Area 20: Non-Point Source Pollution
Region-wide, Category A

Water

- Effect of agricultural and streambank erosion on water quality under study in Ohio Main Stem Study
 - Acid mine drainage reduces effectiveness of point source water quality control program, increases costs of water supplies, locks and dams, industrial facilities, navigation and other water-using equipment
 - Pollution caused by runoff from agricultural and forested lands, active and abandoned mines, urban areas, and by streambank erosion (25,900 miles)
-

Problem Area 21: Energy
Region-wide, Category A

Water

- Offstream cooling and consumptive requirements of fossil and nuclear generating plants, coal gasification and liquefaction facilities, and M&I uses may have significant impacts on water quality and F&WL along Ohio River and lower reaches of major tributaries
 - Inadequate flows to support increased energy development may occur on minor tributaries
-

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE TENNESSEE RIVER BASIN REGION (6)

Problem Area 1: Holston River Basin (Tennessee)
ASR 0601, Category A

Water

- Operation of multipurpose dams adversely affects recreation
- Releases from low-level outlets of deep reservoirs deficient in oxygen
- Quality in North and South Forks, and lower Holston, adversely affected by leachate from abandoned chemical plant, M&I wastes, aquatic plants
- Inadequate sources of supply in Sullivan County and Mountain City

Flooding

- Potentially high urban damages
- 32,000 acres farmland frequently flooded

Problem Area 5: Chattanooga, Tennessee, SMSA
ASR 0601, Category A

Water

- M&I discharges causing pollution in streams
- Inadequate supplies in plateau area of Sequatchie and Marion Counties
- Serious navigation delays expected at Chickamauga Lock in 1985-2000 due to increased barge traffic

Flooding

- Potentially high urban damages
- About 56,000 acres farmland flooded frequently

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE TENNESSEE RIVER BASIN REGION (6)

Related Lands

- Lack of sound urban land-use practices causing land erosion with adverse impacts on streams
-

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE UPPER MISSISSIPPI
RIVER BASIN REGION (7)

Problem Area 1: Upper Mississippi River Main Stem Area (Iowa, Illinois,
Wisconsin Minnesota)
ASR 0702 & 0703, Category A

Water

- Quality degraded by M&I waste discharges at major urban centers;
agricultural pollution; turbidity
- Lake eutrophication
- Deterioration of groundwater in limestone areas of SE Minn.
- Navigation channel shoaling from heavy bedload sediment

Related Lands

- Erosion and sedimentation causing financial, F&WL habitat, recreational
damages
- Emerging land use conflicts over location and placement of dredged
materials
- Conflicts over changes of natural settings and agricultural/urban use
- Decrease in forests due to intensive agriculture

Flooding

- Major urban and agricultural, moderate recreational damages
 - Agricultural damage potential increasing
 - Lack of floodplain land use ordinances
-

Problem Area 2: Middle Mississippi River Main Stem Area (Missouri,
Illinois, Iowa)
ASR 0703 & 0704, Category A

Water

- Localized paint pollution at major urban centers, high turbidity from

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE UPPER MISSISSIPPI
RIVER BASIN REGION (7)

erosion and flooding, high bacterial and nutrient concentrations
throughout

- Extensive maintenance dredging of navigation channel required due to heavy bedload sediment

Related Lands

- Streamband erosion accelerated by flooding and changing land uses
- Major sediment damage to F&WL habitat
- Agricultural, residential and other developments reducing forest areas, wildlife habitat

Flooding

- Major urban, rural and agricultural damages; moderate recreational & power plant damages
- Development of intensive, high value agriculture increasing damage potential

Problem Area 3: St. Louis SMSA (Missouri, Illinois)
ASR 0705, Category A

Water

- Quality degraded by M&I discharges, storm water runoff, turbidity from point and non-point sources
- Shallow groundwater supplies east of river degraded by inadequate solid and liquid waste disposal systems, improperly constructed wells, natural intrusion and pumping
- Lack of flat-water recreational opportunities in Missouri
- Navigation channel shoaling by heavy bedload sediment, requiring dredging

Related Lands

- Extensive damages to building substructures in East St. Louis due to fluctuating groundwater levels
- Significant sheet, gully, streambank erosion to rural and urban properties, agricultural and recreational lands, environmental resources throughout area
- Significant sediment damages along main stem and major tributaries

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE UPPER MISSISSIPPI
RIVER BASIN REGION (7)

- Agricultural and urban expansion reducing forest areas, wildlife habitat, creating potential flood and erosion problems

Flooding

- Major urban damages from prolonged high waters on major rivers; flash floods on smaller tributaries
- Extensive damages to recreational facilities and environmental resources
- Man-induced changes in river cross-section reducing overbank carrying capacity, increasing stage-discharge relations

Institutional

- Controversy over rehabilitation, replacement, modification, modernization of navigation works

Problem Area 9: Middle Illinois River & Tributaries Area (Illinois)
ASR 0704, Category A

Water

- Potentially serious supply problem in Peoria-Pekin area from locally high consumptive demands in late summer and fall
- Quality degraded along Illinois and Mackinaw by M&I and agricultural wastes
- Eutrophication in late summer and fall
- Significant hardness and iron restrict potability of surficial aquifers
- Deeper aquifers quality decreases with depth; have high mineral content

Related Lands

- Moderate urban, recreational damages; severe rural and agricultural damages; severe rural and agricultural damages
- Excessive sheet, gully, streambank erosion damages to rural properties, strip mines, agricultural and recreational lands, environmental resources
- Significant sediment damages in Mackinaw and Illinois rivers and drainage areas
- Illinois river navigation channel shoaled by heavy bedload; dredging and disposal problems impact on biological communities

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE UPPER MISSISSIPPI
RIVER BASIN REGION (7)

- Agricultural and urban expansion reducing forest areas, F&WL habitat, increasing flooding and erosion

Flooding

- Moderate urban, recreational damages; severe rural and agricultural damages
-

Problem Area 13: Lower Rock River Basin Area (Illinois)
ASR 0703 & 0704, Category A

Water

- Quality degraded by high dissolved or suspended organic and inorganic materials, eutrophication
- Depths and surface area inadequate for recreational needs of residents

Related Lands

- Wetlands, small lakes and ponds drained and filled for agriculture
- Severe sheet, gully, and bank erosion of agricultural and recreational lands, and environmental resources
- Extensive sediment damages throughout area

Flooding

- Severe urban, extensive rural and agricultural, moderate recreational damages
-

Problem Area 16: Upper Rock River Basin Area (Wisconsin, Illinois)
ASR 0702 & 0703, Category A

Water

- Potential low streamflow on river, drawdown of Lake Koshkonong by proposed nuclear power plant
- Quality degraded by M&I waste discharges, urban and agricultural runoff,

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE UPPER MISSISSIPPI
RIVER BASIN REGION (7)

malfunctioning of individual sewage disposal systems, turbidity
(exacerbated by carp)

- Poor recharge of Platteville-Galena aquifer under Maquoketa Shale may require shift to surface supply or other recharge system in Rockford Metropolitan Area after 1980
- High nitrates in private wells in Columbia and Dane Counties from intensive farming and fertilizer applications
- High dissolved solids in wells in Rock and Winnebago Counties from chemical pollution from land fills in gravel pits

Related Lands

- extensive drainage and filling of wetlands for agriculture
- Gully and streambank erosion of silty soils increased by flooding and changing land uses
- Significant sediment damages to recreational and environmental resources, especially in river delta areas
- Loss of valuable forest resources to agricultural/rural and urban developments
- Potential environmental loss from drainage of wetlands and stripping of vegetation to facilitate agriculture and urbanization

Flooding

- Major urban flood and storm drainage damages
- Significant rural and pasture damages
- Intensive urban development of flood plains
- Lack of floodplain land use ordinances

Problem Area 17: Lower Wisconsin LaCrosse River Basin Area (Wisconsin)
ASR 0702 & 0703, Category A

Water

- Quality degraded by municipal treatment and dairy plant wastes, agricultural land runoff erosion
- Malfunctioning of septic systems around Lake Wisconsin
- Sixteen lakes have problems of weeds, algae, fish winterkill, pollution, nutrients and eutrophication

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE UPPER MISSISSIPPI
RIVER BASIN REGION (7)

- Shortage of water surface to meet recreational needs of residents
- Groundwater pollution in Columbia County from geologic conditions, septic systems, intensive agricultural practices

Related Lands

- Severe gully and streambank erosion due to steep topography, erodible soils, and floods
- Erosion and sedimentation aggravated by extensive cutting of evergreen belts to accommodate irrigation
- Population growth near Madison alters wild and scenic areas, including habitat, increasing erosion and sedimentation

Flooding

- Extensive damages to urban areas and high value agricultural crops
- Lack of floodplain ordinances in many floodprone communities

Problem Area 17: Lower Wisconsin LaCrosse River Basin Area (Wis)
ASR 0702 & 0703, Category A

Water

- Quality degraded by municipal treatment and dairy plant wastes, agricultural land runoff, erosion
- Malfunctioning of septic systems around Lake Wisconsin
- Sixteen lakes have problems of weeds, algae, fish winterkill, pollution, nutrients and eutrophication
- Shortage of water surface to meet recreational needs of residents
- Groundwater pollution in Columbia County from geologic conditions, septic systems, intensive agricultural practices

Related Lands

- Severe gully and streambank erosion due to steep topography, erodible soils, and floods
- Erosion and sedimentation aggravated by extensive cutting of evergreen belts to accommodate irrigation
- Population growth near Madison alters wild and scenic areas, including habitat, increasing erosion and sedimentation

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE UPPER MISSISSIPPI
RIVER BASIN REGION (7)

Flooding

- Extensive damages to urban areas and high value agricultural crops
 - Lack of floodplain ordinances in many floodprone communities
-

Problem Area 18: Central Wisconsin River Basin Area
ASR 0702 & 0703, Category A

Water

- Insufficient surface and groundwater supplies in Marshfield area
- Quality degraded by high M&I and agricultural wastes, causing low DO
- Lake Wisconsin affected by algae blooms and eutrophication; Petenwell Reservoir, by winter DO deficiency and fish kills; other lakes by weeds, fish kills, pollution, eutrophication
- Lake level fluctuations in Adams Co.
- Threat of groundwater contamination by recharge to municipal wells near Stevens Point and Port Edwards

Related Lands

- Moderate bank and gully erosion increased by flooding
- Severe erosion on eastern shores of Castle Rock and Petenwell Lakes
- Agricultural, residential development, other uses causing increased flooding, erosion, degradation of fish habitat and scenic values along Baraboo and Wisconsin Rivers
- Inadequate access to Lemonweir River

Flooding

- Major damages to urban and rural properties, crops, forests, transportation
- Lack of urban floodplain ordinances

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE UPPER MISSISSIPPI
RIVER BASIN REGION (7)

Problem Area 19: Upper Wisconsin River Basin Area
ASR 0702, Category A

Water

- Quality degraded by high M&I and agricultural wastes, resulting in severe eutrophication and algae blooms
 - Recharge from Wisconsin River or tributary increasing possibility of contaminating high capacity municipal wells
-

Related Lands

- Gully and streambank erosion increasing because of flooding and land use changes
 - Development of shorelands and floodplains increasing flood damages, erosion, water quality problems
 - Potential problems due to expected large-scale mining in Oneida County
-

Flooding

- Urban damages
 - Lack of floodplain ordinances
-

Problem Area 34: Middle Des Moines River Basin Area (Iowa)
ASR 0703, Category A

Water

- Insufficient flow in late summer, fall and winter, to maintain quality recreational and environmental uses
- Quality degraded by high M&I and agricultural pollutants, agricultural land runoff
- Excessive turbidity in lower half of area from animal feedlots and agricultural land runoff
- Eutrophication in lakes, streams, reservoirs

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE UPPER MISSISSIPPI
RIVER BASIN REGION (7)

- Thermal pollution from power plants on Des Moines and Lower Raccoon Rivers
- Potential groundwater deficiencies for future M&I needs
- High TDS, iron, hardness in unconsolidated groundwater aquifers

Related Lands

- Severe sheet, gully and streambank erosion to rural properties, agricultural and recreational lands
- Extensive sediment damage
- Conflict over conversion of recreational and environmental lands to urban and agricultural uses

Flooding

- Major urban, severe rural and agricultural moderate recreational damages

Problem Area 7: Sangamon River Basin Area (Illinois)
ASR 0704, Category B

Water

- Serious supply problems from large concentrated demands in northern portion
- Possible serious effect on northern stream flows from high consumptive demands during droughts
- Stream quality degraded by high M&I and agricultural wastes
- Serious eutrophication in Lakes Decatur, Springfield, Taylorville
- Significant hardness and high iron concentrations in surficial aquifers, restricting use as potable supply

Related Lands

- Severe sheet, gully, streambank erosion damage to rural properties, strip mines, agricultural and recreational lands, environmental resources
- Significant sediment damages throughout

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE UPPER MISSISSIPPI
RIVER BASIN REGION (7)

Flooding

- Moderate urban, severe rural and agricultural, moderate recreational damages
-

Problem Area 23: Minneapolis-St. Paul SMSA (Minnesota)
ASR 0701, Category A

Water

- M&I surface supplies deficient in late summer, fall and winter
- Extensive dredging to maintain navigable depths in late summer, fall, winter
- Surface quality degraded by M&I, animal wastes, land runoff, thermal pollution
- Fluctuating lake levels associated with groundwater withdrawals
- Potential deficiencies in groundwater supplies for rural and M&I uses; contaminated in rural areas from malfunctioning of on-site waste disposal units

Related Lands

- Extensive drainage of wetlands for agricultural and urban development
- Scattered streambank erosion
- Significant sheet and gully erosion in rural sections
- Heavy bedload sediment shoaling navigation channel in Mississippi, Minnesota, and St. Croix Rivers
- Natural shoreline areas being converted to agricultural, urban and other uses

Flooding

- Major urban damages; crop losses
- Flood and sediment damages to urban and non-urban recreation

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE LOWER MISSISSIPPI REGION (8)

Problem Area 1-6: Obion and Forked Deer Rivers Area (Kentucky & Tennessee)
ASR 0801, Category A

Water

- Inadequate water based recreation facilities

Related Land

- Sedimentation and erosion increases farming costs and limits productive land use

Flooding

- Severe and extensive flooding in urban and rural areas
-

Problem Area 1-7: Wolf and Loosahatchie Rivers Basin Area
(Mississippi and Tennessee)
ASR 0801, Category A

Water

- Inadequate water supplies for general outdoor activities
- Industrial and agricultural chemical pollutants degrading water quality and affecting recreation and environmental uses

Related Land

- Erosion and sediment deposition limiting productive land use

Flooding

- Severe and extensive flooding in both urban and non-urban areas

AD-A072 554

NATIONAL DEFENSE UNIV WASHINGTON DC RESEARCH DIRECTORATE F/G 13/2
CURRENT AND PROJECTED WATER RESOURCES PROBLEMS AND THEIR IMPACT--ETC(U)
MAY 79 R D SCHWARTZ

UNCLASSIFIED

4 DF4

AD
A072 654

NL

END
DATE
FILMED

9-79

DDC

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE LOWER MISSISSIPPI REGION (8)

Problem Area 1-8: Nonconnah Creek Area (Mississippi and Tennessee)
ASR 0801, Category A

Water

- Inadequate water supplies for general outdoor activities
- Municipal and industrial pollutants degrading water quality and affecting recreational and environmental uses

Related Land

- Lack of drainage in the urban areas
- Annual erosion rates of 250 tons per acre creating severe sedimentation and water quality degradation
- Conflict between the increasing demand for urban development and diminishing resources of recreation, fish and wildlife, and natural environment

Flooding

- Severe and extensive flooding in urban areas
 - Crop and pasture land flooding in the upstream tributaries
-

Problem Area 1-9: Horn Lake Creek Area (Mississippi and Tennessee)
ASR 0801, Category A

Water

- Inadequate water and riparian land resources for recreational purposes

Related Land

- Sediment from urban development construction degrading water quality
- Gully and bank erosion (caving) destroying lawns and dwelling foundations

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE LOWER MISSISSIPPI REGION (8)

Flooding

- Increased flooding due to increased storm water runoff in the urban areas
-

Problem Area 2-1: Upper Yazoo Area (Mississippi)
ASR 0802, Category A

Water

- Nonpoint sources of pollution, agricultural pesticides and soil erosion affecting biotic production in lakes and streams

Related Land

- Severe erosion and sedimentation
- Extensive land clearing and drainage work reducing availability of wildlife habitat

Flooding

- Frequent flooding of agricultural land, urban property and public roads and bridges
-

Problem Area 2-3: Yazoo River Area (Mississippi)
ASR 0802, Category A

Water

- Contamination of surface waters with agricultural produced sediments and pesticides
- Localized water pollution due to municipal and domestic wastes
- Waterborne commerce restricted by numerous sharp bends and obstructions

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE LOWER MISSISSIPPI REGION (8)

Related Land

- Rapid clearing and draining of fertile bottom-land hardwood forests, which are havens for many types of wildlife, for agricultural, commercial, and residential use

Flooding

- Flooding of about 2.2 million acres of agricultural land

Problem Area 3-1: New Orleans-Baton Rouge Area (Louisiana)
ASR 0803, Category A

Water

- Inadequate river flow to prevent saltwater intrusion into municipal and industrial water supplies drawn from the river below New Orleans
- Serious water quality degradation due to discharges from industries along the Mississippi River between Baton Rouge and New Orleans
- Lack of adequate treatment of the municipal wastes
- Degradation of marine and estuarine waters adversely affecting the commercial fishing industry and destroying fish and wildlife habitat
- Lack of deep-draft approaches to ports threatening future competitive position of the area

Related Land

- Reduced navigation depths and deep draft access due to sedimentation
- Rapid subsiding and eroding of delta due to compaction, settling and lack of sediment deposits
- Inadequate drainage on 60,000 acres

Flooding

- Restricted overbank flooding of the Mississippi River preventing replenishment of nutrients and sediments which nourish and propagate the marshland adjacent to the river
- Although a high degree of flood protection is provided by the Mississippi River and Tributaries project and other flood control measures, flooding remains a serious problem in the area

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE LOWER MISSISSIPPI REGION (8)

Financial

- Inadequate Federal funding is delaying completion of the Flood Control, Mississippi River and Tributaries project
-

Problem Area 3-7: Lake Charles and Vicinity (Louisiana)
ASR 0803, Category A

Water

- Salt water intrusion and pollution from municipal, industrial and agricultural waste discharges adversely affecting fisheries resources, water supplies for irrigation and water oriented recreation in Calcasieu River and Lake, and the surrounding estuaries
 - Saltwater intrusion in Calcasieu River and Lake between June and December
 - Declining groundwater levels due to existing pumping patterns
 - Water pollution, low flows and saltwater intrusion severely affecting the fishery resource in Calcasieu River, Lake and surrounding estuary
 - Pollutants causing off-flavor in commercial fish and shellfish and legitimate concern for health of the human consumer
 - Recreation in Calcasieu River and Lake adversely affected by the poor water quality
-

Problem Area 1-16: Little River Basin Area (Missouri and Arkansas)
ASR 0801, Category B

Flooding

- Extensive headwater flooding of agricultural and urban lands
-

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE SOURIS-RED-RAINY RIVER BASINS REGION (9)

Problem Area 4: Souris River Main Stem Area (North Dakota)
ASR 0901, Category A

Water

- Insufficient flows in late summer and winter for minimum waste assimilation and F&WL needs
- Current supply sources (Minot Aquifer and Souris River) insufficient for Minot's projected needs
- Surface supplies insufficient for expanded sand and gravel mining
- Quality degraded by agricultural and M&I wastes; excessive TDS in Souris during low flows
- Inadequate waste treatment at Minot, Velva
- Water surface area inadequate for recreation

Related Lands

- Conversion of floodplains and wetlands to urban and agricultural uses

Flooding

- Extensive urban and rural damages along Souris River from Minot to Velva

Problem Area 9: Red River Main Stem Area (Minnesota, North Dakota)
ASR 0901, Category A

Water

- Insufficient flows in late summer and winter for minimum waste assimilation and favorable fish habitat
- Potential supply problems due to declining water levels and expanding needs of agriculture
- Red River rated undesirable for drinking water by States' standards
- Inadequate urban and sugarbeet mills waste treatment facilities
- Groundwater quality degraded by excessive TDS, iron, manganese, sulfates

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE SOURIS-RED-RAINY RIVER BASINS REGION (9)

Related Lands

- Seeding and harvesting problems from standing water after snowmelt and rains
- Sheet, rill, and gully erosion by water and wind
- Conversion of floodplains to urban and agricultural uses

Flooding

- Urban and agricultural damages

Institutional

- Regional and international land use conflicts from construction of agricultural levees

Problem Area 14: Park River Basin Area (North Dakota)
ASR 0901, Category A

Water

- Quality degraded by low DO in late summer, fall and winter; high organic loads and temperatures, lake eutrophication, excessive mineral concentrations
- Inadequate urban waste treatment facilities
- Groundwater quality degraded by excessive TDS, iron, manganese, sulfate
- Potential supply deficiencies for M&I use
- Inadequate water surface for recreation

Related Lands

- Agricultural difficulties from excess standing water on flat lands
- Urban and agricultural encroachment on floodplains and wetlands

Flooding

- Recurrent agricultural and urban flooding

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE SOURIS-RED-RAINY RIVER BASINS REGION (9)

Problem Area 15: Pembina River Basin Area (North Dakota)
ASR 0901, Category A

Water

- Insufficient surface waters to satisfy water supply and recreational demands
- Groundwaters very limited; quality degraded by iron, sulfates, dissolved solids in excess of drinking water standards, low oxygen and high organic loads

Related Lands

- Severe bank, sheet and gully erosion caused by both wind and water
- Residential and agricultural encroachment on floodplains and wetlands

Problem Area 16: Red Lake River Basin & Red River Main Stem Area
(Minnesota, North Dakota)
ASR 0901, Category A

Water

- Locally high consumptive demands on streamflow may aggravate supply problems
- Quality degraded by M&I and agricultural wastes
- Inadequate urban waste treatment facilities
- Eutrophication in late summer and fall
- Potential rural groundwater supply deficiencies
- Inadequate water surface for recreation
- Insufficient flows in summer, fall, and winter to assimilate wastes and for fish habitat

Related Lands

- Agricultural production inhibited by ponding and excess water on relatively flat lands
- Drainage of wetlands, small lakes and ponds for agricultural development

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE SOURIS-RED-RAINY RIVER BASINS REGION (9)

- Extensive streambank and sheet erosion of rural, agricultural, recreational, environmental lands
- Increased flood damage potential from urban, residential, and agricultural uses of floodplains

Flooding

- Severe urban, rural, agricultural, recreational, environmental flood damages
- Flood damages caused by normal stream overflow and by entrapment of water within areas bounded by raised roadways due to plugged culverts and ditches

Problem Area 27: Rainy River Main Stem Area (Minnesota)
ASR 0901, Category A

Water

- Quality and color degraded by two industrial plants at International Falls; quantity and quality of waste is such that problems will remain after 95 percent removal
- Groundwater quality degraded by excessive iron and manganese

Related Lands

- Wind and water erosion of valuable agricultural topsoil in SW portion of area
- Excess wetness due to sheet water flooding on crop, pasture, forest lands
- Drainage of wetlands and wildlife habitat
- Encroachment of agriculture on forest areas

Flooding

- Rural and agricultural damages
- Severe flood damages and shoreline erosion near Lake of the Woods

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE SOURIS-RED-RAINY RIVER BASINS REGION (9)

Problem Area 1: Long Creek-Western Souris Area (North Dakota)
ASR 0901, Category B

Water

- Low to zero flows in late summer, fall and winter cause high TDS, low DO, high bacteria, disagreeable physical characteristics
- Inadequate urban waste treatment facilities
- Potential supply shortages for development of potash resources
- Increasing nutrient levels and lake eutrophication
- Extremely shallow and limited surface areas (streams and lakes) for recreation, fishing and hunting

Related Lands

- High alkaline and saline soils (332,500 acres, about 22 percent of area)
-

Problem Area 13: Forest River Basin Area (North Dakota)
ASR 0901, Category B

Water

- Insufficient streamflows in late summer, fall and winter for minimum waste assimilation needs and maintenance of favorable aquatic environment for fish
- Inadequate water surface for recreation
- Quality seriously degraded by M&I and agricultural pollution
- Inadequate urban waste treatment facilities
- Groundwater quality characterized by excessive TDS, iron, manganese

Related Lands

- Agricultural production inhibited by excess water standing on relatively flat lands
- Drainage of wetlands, small lakes and ponds for agricultural use

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE SOURIS-RED-RAINY RIVER BASINS REGION (9)

Flooding

- Extensive damages to rural properties, small communities, agricultural, recreational, and environmental resources
-

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE MISSOURI BASIN REGION (10)

Problem Area 2: White River Medicine Creek Basins (Nebraska, South Dakota)
ASR 1005, Category A

Water

- Inadequate quantity and poor quality water supplies for municipalities and rural areas
- Inadequate quality of much of the surface and ground supplies, although the headwaters area in Nebraska has high quality water
- Intermittent and low streamflows
- Lack of adequate fishing water and water oriented recreation areas
- Deterioration and inefficiency of many of the diversion, storage and distribution structures of the Whitney Irrigation District in Nebraska
- A shortage of adequate irrigation water due to a lack of adequate rainfall and streamflow and water quality degradation of ground and surface water

Related Land

- Streambank, gully and surface land erosion
- Degradation of water quality of the White River due to erosion from the Badlands area
- Sedimentation of stock water ponds

Flooding

- Frequent flooding of agricultural lands

Institutional

- Unquantified water rights for the large Pine Ridge and Rosebud Indian reservations in South Dakota
-

Problem Area 3: Big Sioux River Basin (Iowa, Minnesota, South Dakota)
ASR 1006, Category A

Water

- Inadequate water supply for Sioux Falls, South Dakota
- Highly mineralized ground waters that result in communities and rural

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE MISSOURI BASIN REGION (10)

- areas being without an adequate water supply
- Water quality problems in the Big Sioux River due to protracted periods of low streamflow
- Water quality degradation and lack of reservoir storage severely limits irrigation
- Low streamflows and reduced stream fisheries due to water quality problems
- A lack of adequate fishing waters and water-oriented recreation areas at or near most communities
- Lack of adequate recreational facilities at some of the natural lakes

Flooding

- Frequent flooding of cities, communities, and agricultural areas that results in frequent damage and loss of crops

Financing

- High water development costs, together with local attitudes and inadequate support concerning institutional arrangements and cost-sharing for needed project development

Problem Area 5: Big and Little Blue River Basins (Kansas and Nebraska)
ASR 1010, Category A

Water

- Numerous community ground water supplies degraded by excessive amounts of iron, dissolved solids, and nitrates
- Inadequately treated wastewater causes surface water pollution
- Concentrations of septic tanks at cabin agglomerations cause pollution of both ground and surface water
- Problems due to livestock wastes, runoff and leaching from irrigated lands and solid waste disposal sites and pesticides from agricultural areas
- Serious declines in ground water levels caused by irrigation pumping
- Serious lack of water-oriented recreation areas

Related Land

- Improved drainage needed on flat uplands, shallow depressions and bottomland areas

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE MISSOURI BASIN REGION (10)

Flooding

- Many communities suffer from frequent flooding and nearly 480,000 acres of agricultural land is subject to periodic flooding
 - Logs and other debris cause log jams at bridges resulting in frequent damage and raising of flood crests
 - Land surface and gully erosion affects agriculture land
-

Problem Area 7: Lake of the Ozarks (Missouri)
ASR 1011, Category A

- Point and non-point source pollutants
 - Recreational use of the lake impaired from enrichment by pollutants
 - Need to upgrade resort and community waste treatment
 - Control or prevent resort and residential septic tank leachates from reaching lake and causing ground water quality problems
-

Related Land

- Increases in clearing forest and woodland areas for agricultural uses
 - Unplanned and uncontrolled intensive development surrounding the lake
-

Institutional

- Lack of laws and policies to govern development and local operations
-

Problem Area 12 (2): Great Falls (Montana)
ASR 1002, Category B

Water

- Water quality degradation of surface runoff due to saline seeps, irrigation return flows and acid mine drainage
- Proposed reservoir alternatives threaten recreation, environment and wilderness values but provide alternate environmental and recreation values

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE MISSOURI BASIN REGION (10)

Related Land

- Degradation of surface water due to improper land use practices, grazing, logging and cropping

Flooding

- Severe urban flooding on the Sun River at Great Falls
-

Problem Area 22 (14): Omaha-Council Bluffs Metro Area (Iowa, Nebraska)
ASR 1009, Category B

Water

- Omaha deficient in water based recreation
- Water quality degradation due to storm runoff

Flooding

- Severe urban flooding in Omaha, Bellevue and Council Bluffs
-

Problem Area 23 (17): South Platte River Basin (Colorado)
ASR 1007, Category B

Water

- Additional municipal and industrial water supplies are required
- Small communities and rural areas have problems due to inadequate supplies, poor quality and financial difficulties
- Extensive water quality degradation of the South Platte River
- Low stream flows and lake levels causing assimilation difficulties
- Conflict exists between supply and recreation and habitat

Flooding

- Major urban flooding occurs while urban development of flood plains continues
- Extensive rural flooding, erosion and sedimentation

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE MISSOURI BASIN REGION (10)

Institutional

- Irrigation water rights being converted to municipal and industrial use
 - Controversial importation of Colorado River water
-

Problem Area 24 (19): Lower Platte River Basin (Nebraska)
ASR 1008, Category B

Water

- Water quality degradation in the Platte River and Buffalo Creek
- Ground water degradation due to runoff from feedlots and cropland
- Irrigation water shortages
- Low base flow in the Platte River due to irrigation use

Related Land

- Platte River Islands threatened by urban and private developments

Flooding

- Urban flooding
- Rural flooding with impaired drainage
- Serious gully and sheet erosion on Skull Creek

Institutional

- Need for a conjunctive surface/ground water use plan
-

Problem Area 25 (18): Loup-Middle Platte Basin (Nebraska)
ASR 1008, Category B

Water

- Extensive water quality problems in the basin
- Additional water supply and rehabilitation for irrigation systems
- Reduced streamflow resulting in diminished fisheries and habitat
- Seepage problems due to rising ground water levels

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE MISSOURI BASIN REGION (10)

Flooding

- Moderate urban flooding in the basin
- Rural flooding, erosion and sedimentation

Institutional

- Irrigation systems require additional water supply and rehabilitation
 - McConaughy Reservoir operation changes are needed
-

Problem Area 27 (21): Cedar Bluff-Kanopolis-Salina (Kansas)
ASR 1010, Category B

Water

- Future municipal water supply shortage
- Dependable and increased irrigation supply needed
- Water quality degradation in the drainage area
- Fluctuating reservoir levels create problems

Institutional

- Preservation of Indian petroglyphs at Kanopolis Reservoir
-

Problem Area 28 (24): Kansas City SMSA (Kansas, Missouri)
ASR 1011, Category B

Water

- Municipal water supply shortage
- Supply shortages projected for urbanizing areas
- Ground waters are highly mineralized and unsuitable for domestic and agricultural use
- Water quality degradation in Missouri River main stem due to storm runoff
- Public access for river recreation is limited

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE MISSOURI BASIN REGION (10)

Flooding

- Extensive urban flooding
- Serious rural flooding and erosion in river bottom areas

Institutional

- Upstream states development could curtail water supply for use and navigation
 - Flood plain management public policy needed
-

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE ARKANSAS-WHITE-RED REGION (11)

Problem Area 3: Statewide (Arkansas)
ASR All, Category A

Water

- Lack of data on ground water quality
- Impact of land use on ground water quality

Flooding

- Flood control
-

Problem Area 1: Arkansas Drainage Above Pueblo (Colorado)
ASR 1102, Category A

Water

- During drought and low runoff years, shortages are on the order of 25.0 MGD for the SMSA's
- During late season and dry periods, the flow in streams becomes too low to sustain good fisheries
- Shortage of water areas in lakes and reservoirs to meet water based recreation, fishing and hunting demands
- Water quality degradation of the Arkansas River and tributaries upstream of Buena Vista due to numerous abandoned mines

Related Land

- Prime irrigated farm lands are being converted to urban uses in the rapidly developing SMSA's of Colorado Springs and Pueblo

Flooding

- Serious floods on the Arkansas River, Fountain Creek and their tributaries

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE ARKANSAS-WHITE-RED REGION (11)

Institutional

- The issue of Federal claims for water rights on public lands with dates of priority as the date of public land withdrawal

Financial

- Additional State funding to meet the cost-sharing responsibilities for proposed recreation development on water projects

Problem Area 2: Arkansas Drainage Pueblo-State Line (Colorado)
ASR 1102, Category A

Water

- The quality of the water in the Arkansas River degrades downstream below Pueblo due to leaching of the soils from the use and re-use of the water for irrigation, and lack of streamflow for dilution. The high salt content adversely affects crop production.
- The dissolved solids of the ground water exceed approved standards for municipal uses
- Water supply is insufficient to meet requirements
- Water supply of the small municipal systems and valley water districts are inadequate to meet requirements
- Low flows in the fall and during dry periods are inadequate to sustain fisheries
- A severe shortage of water areas for water based hunting, fishing and recreation
- Dissolved solids in the surface and ground water exceed the recommended standards for domestic consumption

Related Land

- Serious bank erosion occurs along all streams
- Overbank flow deposits sediments over cropped fields, in irrigation canals and storage reservoirs
- Gully and sheet erosion on uplands
- Bank erosion threatens irrigation diversion headworks

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE ARKANSAS-WHITE-RED REGION (11)

Flooding

- The Arkansas River and local tributaries flooding the urban areas of Lamar, LaJunta and Las Animas
- Farm lands along all streams are subject to inundation and crop loss
- Roads, bridges, and irrigation facilities are seriously damaged during flood events

Institutional

- Revision of the Arkansas River Compact between the States of Colorado and Kansas, and the United States for the operation of the John Martin Reservoir to permit better utilization of the Arkansas River. The need for irrigation water is not necessarily the same in the two states at the same time.

Financial

- Increased funding for recreational facilities is needed for Federal agencies having land management responsibilities
- Additional State funding is needed to meet cost-sharing responsibilities for recreation development on water projects

Problem Area 1: Red River Area (Louisiana)
ASR 1107, Category A

Water

- The Red River is unsuitable at low flow for irrigation and public supply due to high salinity, dissolved solids, sediment, herbicides and pesticides
- High flows are not dependable
- The depth of the Red River is insufficient for commercial navigation and in many months is insufficient to support recreational pursuits. Waterway navigation along the Red River is nonexistent.

Related Land

- Bank erosion causes the loss of many acres of valuable bottomland agricultural lands

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE ARKANSAS-WHITE-RED REGION (11)

- High turbidity in the Red River has increased damage to fish and wildlife

Flooding

- Regular flooding along the Red River and its tributaries
- Flood damage involves agricultural production, public facilities, and private property

Institutional

- Lack of an Interstate Compact on the Red River leaves future supplies available to Louisiana in doubt

Problem Area 2: Joplin Area (Missouri)
ASR 1104, Category A

Water

- Large municipalities and industries discharging waste in headwater areas with practically no benefit of dilution
- Residential areas of concentrated housing with inadequate disposal systems degrading water quality due to soil saturation and ponding
- Water quality degradation of aquifers due to waste discharges
- Chemical industries' waste discharges to Center Creek are degrading water quality.
- Leachate from tailing piles degrading the quality of surface and ground water in the mined areas around Joplin
- Urban demands may require construction of reservoirs

Problem Area 2: (Oklahoma)
ASR 1103, Category A

Water

- Ground water shortages for crude oil secondary recovery and petroleum refining

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE ARKANSAS-WHITE-RED REGION (11)

Related Land

- Phreatophytes transpire large quantities of ground water.

Flooding

- Urban areas with high risk of flood
- High risk floods in non-urban areas result in damages to fences, buildings, and farming equipment, crops and pastures
- Lack of drainage when floods recede

Institutional

- Additional water-oriented recreational facilities needed at both Federal and State levels
- Public policy and programs to move the Arkansas chloride control projects through the planning stages to construction

Problem Area 3: (Oklahoma)
ASR 1104, Category A

Water

- Water supply for Bartlesville
- Operation, maintenance, and alterations to McClellan-Kerr Navigation project to optimize and preserve beneficial outputs of the project
- Maintenance of water quality which meets USPHS standards for M&I uses
- Cooling water for steam electric power generation

Related Land

- Bank erosion control of the navigation channel to prevent sedimentation, dredging and filling

Flooding

- Developed area flood damage risk
- Agriculture and forest land risk of flood damage
- Prevent flooding in communities and rural areas along the navigation channel

**SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE ARKANSAS-WHITE-RED REGION (11)**

Institutional

- Flood plain management programs
- Water compacted between states of Kansas and Oklahoma, and Oklahoma and Arkansas
- Need for Federal, State and local governments to determine the best use and to protect the McClellan-Kerr project. Indian tribes claim ownership of the streambed in this reach and all benefits to McClellan-Kerr cannot be appropriately distributed until this issue is satisfactorily settled.

Financial

- Cost sharing for bank stabilization
- Funding of urban problems

Problem Area 4: (Oklahoma)
ASR 1105, Category A

Water

- Rivers and streams not used for recreation because of water quality degradation
- The yield of the Garber-Wellington Sandstone formation needs to be determined to plan for meeting future water supply requirements.
- Water quality degradation of the northern Rush Springs Sandstone

Related Land

- Drainage problems on land near streams

Flooding

- Flood damages in developed areas
- Flood damages to agricultural areas

Institutional

- Public policy and programs needed to develop additional water recreation areas

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE ARKANSAS-WHITE-RED REGION (11)

Problem Area 5: (Oklahoma)
ASR 1106, Category A

Water

- Surface water in the Upper Washita River Basin above Foss Dam has been fully appropriated and surface water use restricted in the remaining Upper Washita River Basin
- Restrictions on water use exist in the Lower Washita River Basin in parts of Caddo, Grady, Garvin and McClain counties
- Surface water in the Washita River must be treated for municipal and industrial use due to natural pollution
- Lower Washita River Basin polluted due to oil field brine and natural pollution
- Insufficient water to meet water oriented recreational needs
- Salt water intrusion in southeast Caddo County

Flooding

- Flood damages risk in communities

Institutional

- Public policy and programs to preserve ground water
- Public policy and programs for development of outdoor recreation

Financial

- Financial assistance to develop municipal and irrigation water sources
-

Problem Area 1: Flood Problems (Texas)
ASR 1105, 06, 07, Category A

Flooding

- Historically, throughout the State of Texas, floods have resulted in the

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE ARKANSAS-WHITE-RED REGION (11)

loss of human life and resulted in serious economic damages to urban areas, agriculture and transportation and utilities industries.

Problem Area 2: Water Supply and Quality (Texas)
ASR 1105, 06, 07, Category A

Water

- Results of an assessment indicated that a total of approximately 600 public water systems in the State will be in violation of the EPA Interim Primary Standards with the majority of these being unable to meet the maximum standards set for the contaminant fluoride and also noncompliance due to excessive nitrates or both. Compliance with the EPA Interim Primary Standards is mandatory and many of the water systems will encounter financial difficulties in providing and operating the necessary treatment facilities or alternative sources of supply to meet the proposed standards.
- A significant portion of the population of Texas (an estimated 6 percent or 734,000 persons) resides in areas where the current water supply system cannot meet the EPA Primary Standards of the 1974 Safe Drinking Water Act.

Problem Area 8: Mid-Arkansas (Arkansas)
ASR 1104, Category B

Water

- Lack of quality ground water
- Lack of surface water storage

Flooding

- Rural and urban flooding

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE ARKANSAS-WHITE-RED REGION (11)

Problem Area 5: Western Arkansas (Arkansas)
ASR 1104, Category B

Water

- Lack of quantity and quality ground water
- Lack of surface water storage
- Strip mining drainage water intrusion

Flooding

- Flooding in rural areas
 - Localized urban flooding
-

Problem Area 2: Caddo, Bossier, Webster Parishes (Louisiana)
ASR 1107, Category B

Water

- Low flow will be insufficient in the future to meet all agricultural and industrial demands.
-

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE TEXAS GULF REGION (12)

Problem Area 13: Upper Colorado River Salinity (Texas)
ASR 1204, Category A

Water

- Inflow of saline water in the Upper Colorado River Basin below Lake J. B. Thomas seriously degrading the quality of the main stem for about 100 miles downstream
 - Below Lake J. B. Thomas, base flow of the river and runoff from local rainstorms contributing very high salt loadings
 - Residual effects of past practices, hamper development of water resources in this part of the basin; hence, the chemical quality of low flows of the river which carry much of the salt load will be slow to improve. Principal counties affected are Scurry, Mitchell, Howard, and Coke.
-

Problem Area 14: Mid-Brazos River Basin (Texas)
ASR 1203, Category A

Water

- Since 1900, more than 400 feet of water level decline has occurred because pumpage has exceeded recharge to the area.
 - Ground water mining caused numerous cities, such as Waco, Temple, and Hillsboro, to convert their water supply to surface water supply; however, natural salt pollution in the upper and middle Brazos Basin causes water in the main stem Brazos River at Waco to be unsuitable for municipal use unless blended with higher quality water.
-

Problem Area 15: Freshwater Flows Bays and Estuaries (Texas)
ASR All Coast, Category A

Water

- Inadequate and/or improperly timed inflow to the 7 bays and estuaries,

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE TEXAS GULF REGION (12)

thereby adversely impacting the fisheries industry and the fish and wildlife habitat

Institutional

- Lack of adequate management criteria and Federal/State programs for preserving inflow to the bays and estuaries

Problem Area 16: Water Supply--Quality Small Cities Rural Communities (Texas)
ASR - All, Category A

Water

- Since passage of the Safe Drinking Water Act of 1974, it has been estimated that approximately 600 public drinking water systems in Texas are in violation of the standards. The majority of these violations have resulted from an inability to meet maximum standards set for fluoride, although other violations have resulted from inability to meet standards for nitrate.

Financing

- The additional cost of meeting the Safe Drinking Water Standards will create financial problems on the public and private water systems involved

Problem Area 17: Floods and Hurricanes (Texas)
ASR All, Category A

Flooding

- Annual flooding on one or more of the major streams in the State, resulting in the loss of human life and causing serious economic losses to urban areas, agriculture, transportation, and utilities

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE TEXAS GULF REGION (12)

Problem Area 18: Ground Water Depletion High Plains (Texas)
ASR 1203 and 04, Category A

Water

- Ground water mining in the Ogallala Formation over much of the 42-county High Plains area of Northwest Texas, thereby causing future economy-wide, large negative economy impacts
-

Problem Area 20: Water Supply - Related Problems Curry, Roosevelt
and Lea Counties (New Mexico)
ASR 1203 and 04, Category 4

Water

- Ground water mining due to large-scale pumpage of ground water for irrigation, industrial, municipal, domestic, livestock, and power production purposes
 - Very hard and high concentration of sulfates or chlorides in several domestic ground water supplies
-

Problem Area 1: Beaumont-Port Arthur Metro Area (Texas)
ASR 1201, Category B

Water

- Navigation improvements coupled with diminished river flows due to upstream diversion allowing salt water intrusion upstream of Beaumont

Related Land

- Serious water quality degradation problems plus increased erosion and flooding due to conversion of pervious land to impervious urban surfaces, urban drainage, and polluted urban runoff

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE TEXAS GULF REGION (12)

Problem Area 2: Upper Trinity River Basin (Texas)
ASR 1202 and 03, Category B

Water

- Inadequate water supplies to meet normal year 2000 or 1975 drought conditions without additional inter-basin transfers
 - Ground water mining due to pumping in excess of recharge in the Dallas-Fort Worth area and the natural low transmissibility of the aquifer
 - Excessive fluoride concentrations in the ground water
-

Problem Area 3: Dallas-Fort Worth Area (Texas)
ASR 1202, Category B

Water

- Chemical and bacteriological pollution of the Trinity River in the vicinity of the Dallas-Fort Worth metropolitan area, causing low oxygen levels and high concentrations of BOD, ammonia, volatile suspended solids, phosphate and fecal coliforms; heavy shock loads of pollutants often result in extensive fish kills
 - Urban runoff causes significant additional pollution
 - Low dissolved oxygen concentrations, high fecal coliform counts an excessive aquatic growth in Lake Livingston downstream of Dallas-Fort Worth area
-

Problem Area 4: Houston-Galveston Area (Texas)
ASR 1202, Category B

Water

- Ground water mining and resulting subsidence causing salt water encroachment and damage to some of the freshwater aquifers and need for alternative inter-basin transfers

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE TEXAS GULF REGION (12)

Related Land

- Property value losses as a result of permanent inundation and intensified flooding due to land surface subsidence causing property damages and land value losses
 - Subsidence in the vicinity of freshwater streams extending flood plains, reducing effectiveness of and increasing surface drainage, risk of severe flooding
-

Problem Area 5: Houston Metropolitan Area (Texas)
ASR 1202, Category B

Water

- Water quality degradation due to wastes from domestic and industrial sources, periodic lack of dissolved oxygen in surface waters of the ship channel and bays, and salt water encroachment due to excessive ground water pumpage
 - Ground water mining, subsidence and saline water intrusion in the vicinity of Texas City, Galveston and near the coast in Chambers County
-

Problem Area 8: Carrizo Aquifer Winter Garden Area (Texas)
ASR 1205, Category B

Water

- Ground water mining and resulting declining water levels, increasing cost of pumping and degrading quality within the aquifer, particularly in Dimmit, Zavala, and eastern Maverick Counties
- Contamination of Carrizo Aquifer due to saline intrusion of water from the Bigford Formation through old well bores
- Extensive water level declines in Dimmit and Zavala Counties causing reversals in the hydraulic gradient of the aquifer, thus allowing for migration of the aquifer's "bad water line" and encroachment of poorer quality water to areas previously having good quality water

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE TEXAS GULF REGION (12)

Problem Area 9: Edwards (Balcones Fault Zone) Aquifer (Texas)
ASR 1204 and 05, Category B

Water

- Pumpage from the Edwards Aquifer which is capable of meeting the foreseeable municipal, industrial, and agricultural needs, causing decline of Comal and San Marcos Springs, reducing fresh water inflows to San Antonio Bay and causing adverse economic impacts
-

Problem Area 11: Water Supply Corpus Christi Metro Area (Texas)
ASR 1205, Category B

Water

- Inadequate water supplies to meet future demands due to inadequate storage capacity
- Ground water mining due primarily to large withdrawals for municipal and industrial use

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE RIO GRANDE REGION (13)

Problem Area 1: Rio Grande Basin (New Mexico)
ASR 1302 and 04, Category A

Water

- Limited surface water supplies which are fully appropriated or committed, mostly for irrigation purposes
- Low yielding and poor quality ground water
- Large deficiencies in water surface area required for projected recreation demands

Related Land

- Headcutting and sheet erosion destroying range and cropland and polluting streams

Flooding

- Flood damage in urban and rural communities

Institutional

- Lack of quantification of Indian and Federal water rights
-

Problem Area 2: Rio Grande and Pecos River Basins (New Mexico)
ASR 1302 and 04, Category A

Water

- Inadequate water supplies for municipal and industrial purposes

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE RIO GRANDE REGION (13)

Problem Area 3: Rio Grande Basin (New Mexico)
ASR 1302, Category A

Water

- Repeated use of water results in quality degradation downstream
- Invasion of poorly drained areas, stream channels and reservoir delta areas with phreatophytic growth

Related Land

- Siltation of canals, laterals, farm distribution systems, and reservoir storage
- Headcutting and sheet erosion
- Lack of drainage causes high water tables under irrigated lands

Flooding

- Uncontrolled flooding in Espanola Valley and in rural communities along tributaries that enter on west side of Caballo and Elephant Butte Reservoirs

Problem Area 5: Rio Grande and Pecos River Basins (New Mexico)
ASR 1302 and 04, Category A

Water

- Ground-water mining in the Roswell artesian aquifer causing declining water levels and saline water encroachment east and north of Roswell
- Dwindling groundwater supplies expected to cause reduction of irrigated lands shortly after the year 2000

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE RIO GRANDE REGION (13)

Problem Area 1: Pecos Valley (Texas)
ASR 1303, Category A

Water

- Ground water mining
 - Elimination of irrigated areas because of poor quality and inadequate amounts of water in most years
 - Deterioration of water quality of the Pecos River, largely from natural brine emissions in New Mexico, precluding its use for irrigation purposes despite operation of the Malaga Bend Division of the McMillan Delta Project
-

Problem Area 4: Rio Grande (Texas)
ASR 1302, 03 and 05, Category A

Water

- Inadequate water supplies and quality problems in small cities and rural communities

Financial

- Lack of funds to build and operate the necessary treatment facilities to meet the proposed standards
-

Problem Area 5: Rio Grande (Texas)
ASR 1302, 03 and 05, Category A

Flooding

- Hurricane induced flooding
- Lack of adequate drainage in the Lower Rio Grande Valley, limiting use of productive agricultural land

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE RIO GRANDE REGION (13)

Problem Area 6: El Paso Area (Texas)
ASR 1302, Category B

Water

- Inadequate surface water supply and quality degradation problems in El Paso
- Ground-water mining causing saline water encroachment from aquifers and degradation of ground water quality
- Water quality degradation due to lateral and vertical encroachment of saline water from adjacent saline water sands

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE UPPER COLORADO REGION (14)

Problem Area 3: Uinta Basin (Utah)
ASR 1403, Category A

Water

- Inadequate rural domestic supplies and levels of treatment
- Unsuitable ground water at many locations and surface waters are far from points of use
- Inadequate irrigation water supplies
- Irrigation return flows degrading streamflows with salt
- Increased population and mineral development causing environmental degradation

Related Land

- Erosion contributing to the sediment and salt load increase
- Recreation demand exceeds available resources and limits fish and game populations

Financial

- Providing adequate facilities overtaxing financial capabilities of communities

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE LOWER COLORADO REGION (15)

Problem Area 1500-1: Colorado River Water Quality Deficiencies
(California, Arizona, Nevada, Utah)
ASR All, Category A

Water

- Inadequate water supplies to meet compact allocations and treaty entitlements within the seven Colorado River Basin States and the Republic of Mexico

Related Land

- Increasing competition for water and its transfer to the highest economic use increasing conflicts between management of riparian vegetation for wildlife habitat versus management for reduction of water consumption

Institutional

- Conflicts between users concerning priority of use and transfer of water between uses

Problem Area 1500-2: Lower Colorado Salinity (California, Arizona, Nevada, Utah)
ASR All, Category A

Water

- Increasing instream salinity due to salt loading and salt concentration impairs usefulness for municipal, commercial, industrial and irrigation purposes
- Increasing salinity causing agriculture production loss, limited crop varieties, increased operating costs, and increased agriculture water requirements

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE LOWER COLORADO REGION (15)

- Increased salinity causing increased treatment costs, pipe corrosion, appliance wear, increased use of soap, and decreased potability

Problem Area 1501-1: McKinley County (New Mexico)
ASR 1501, Category A

Water

- Inadequate water supplies for Gallup and Zuni Pueblo
- Undependable surface water supplies for irrigation and domestic use
- Very low ground water yields of poor quality in many areas
- Inadequate water supplies for development of major coal and uranium resources
- Excessive instream suspended sediment limiting use
- Poor ground water quality limits irrigation development on Indian reservations which constitute 62 percent of the problem area

Related Land

- Severe erosion resulting in loss of productive capacity for crops, livestock and wildlife
- Sediment deposition causing loss of channel capacity and reducing reservoir storage capacity

Flooding

- Frequent flooding of small communities including the Navajo Indian Reservation villages
- Cropland flooding

Problem Area 1501-2: Apache and Navajo Counties (Arizona)
ASR 1501, Category A

Water

- Inadequate streamflow and surface storage on the Navajo Indian Reservation

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE LOWER COLORADO REGION (15)

- Many Indian communities without central water supplies
- Inadequate water supplies for coal development
- Excess sediment limiting surface water use
- Unsuitable ground water quality for domestic and irrigation use

Related Land

- Excessive erosion resulting in loss of capacity for crops, livestock, and wildlife
- Sediment deposition causing loss of channel capacity and reservoir storage

Flooding

- Frequent flooding of Navajo Indian Reservation communities

Institutional

- Conflicts between water rights on Federal, State, Indian and private land

Financial

- Inadequate financing for local programs on the Navajo Reservation

Problem Area 1502-1: Coconino County (Arizona)
ASR 1502, Category A

Water

- Inadequate stream flow and surface storage, especially on Indian land
- Very low ground water yield and poor quality limits utilization
- Large quantities of suspended sediments impair utilization of the Little Colorado River water

Related Land

- Sedimentation damaging rural and urban communities, surface water developments, cropland, and carrying capacity of streams
- Erosion reducing wildlife, livestock, and cropland productivity

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE LOWER COLORADO REGION (15)

Flooding

- Minor flooding of several communities
-

Problem Area 1502-4: Las Vegas Valley (Nevada)
ASR 1502, Category A

Water

- Inadequate surface supplies, groundwater overdraft, land subsidence and loss of fauna
- Municipal and industrial wastes discharged to Las Vegas Wash, polluting Lake Mead and the Colorado River

Flooding

- Increased flood damages due to increased population and economic activity in flood plain
-

Problem Area 1502-5: Lower Colorado River Valley (Arizona, Nevada)
ASR 1502, Category A

Water

- Limited streamflow and phreatophytes constraining development of additional irrigated agriculture, electric power generation, and recreation
- High salinity causing economic damages to downstream water users
- Sewage effluent from municipal and recreational developments and concentrated recreational use increase bacterial and viral concentrations in portions of the Colorado River
- High mineral content of ground water impairs use

Related Land

- Aggradation of the river channel impairs boating, causes drainage problems, water loss, and increases flood hazard

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE LOWER COLORADO REGION (15)

- Conflicts between preservation of habitat and land development

Institutional

- Exports to California limiting development within Problem Area

Financial

- Large Federal investments required to relieve the basin states of the Mexican Treaty obligations
-

Problem Area 1503-1: Catron, Grant Hidalgo Counties (New Mexico)
ASR 1503, Category A

Water

- Erratic streamflow (droughts and floods) due to inadequate surface storage
- Domestic supplies contain high TDS
- Conflicts between removal versus maintenance of phreatophytes

Related Land

- Headcutting and sheet erosion destroying rangeland and polluting streams

Flooding

- Severe flood hazards in communities and on croplands along the Gila and San Francisco rivers and tributaries

Institutional

- Legal constraints restrict use in New Mexico, resulting in inadequate supplies available for mineral production, industries, domestic, and agriculture needs

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE LOWER COLORADO REGION (15)

Problem Area 1503-2: Greenlee, Graham Counties (Arizona)
ASR 1503, Category A

Water

- Inadequate water supplies to meet present uses and projected mineral developments
- Increasing overdraft of groundwater throughout area; inadequate supplies to meet existing uses in Safford Valley
- Increasing salinity of groundwater due to increased salinity of Gila River which is the predominant source of groundwater recharge
- Lack of flow regulation on the Gila River
- Phreatophytes infringe on Gila River channel and use large quantities of water

Related Land

- High sediment concentrations in the Gila and San Carlos Rivers increase maintenance cost of irrigation facilities, constrain storage development, reduce life of storage facilities, and degrade recreational and fishery resources

Institutional

- Water rights of the Gila River Decree constrain development of stream regulating facilities and limits management

Problem Area 1503-3: Cochise County (Arizona)
ASR 1503, Category A

Water

- Excessive overdraft of the groundwater aquifer due to large irrigation withdrawals

Related Land

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE LOWER COLORADO REGION (15)

- Excessive erosion in much of the area
- Conflicts between land development and maintenance of wildlife habitat

Flooding

- Flood damages to numerous communities and irrigated cropland

Problem Area 1503-4: Maricopa County (Arizona)
ASR 1503, Category A

Water

- Insufficient supply to meet present and future needs without excessive ground water overdraft
- Stream pollution hazards from recreation areas
- Increasing groundwater demand, increasing salinity contamination and impairing use of ground water
- Quality problem includes Gila Bend Indian Reservation
- Increased subsidence in the future due to groundwater overdraft

Related Land

- Loss of irrigated land due to overdraft reducing wildlife habitat
- Prevalent excessive erosion
- Sedimentation requiring increased maintenance of irrigation facilities, shortened life of storage facilities and damaged property
- Conflicts between urban growth and both preservation of archeological, geological, and historic resources and maintenance of agricultural land

Flooding

- Flooding damages to developed areas and irrigated land due to flood plain encroachment

Institutional

- Lack of a common State-Federal-Indian priority of use system

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE LOWER COLORADO REGION (15)

Problem Area 1503-6: Pima, Pinal Counties (Arizona)
ASR 1503, Category A

Water

- Inadequate supplies to meet present and future needs without excessive groundwater overdraft
- Intermittent streamflows
- High salinity ground water and increased nitrate concentrations due to recharge by secondary effluents in dry channels

Related Land

- Excessive erosion over much of the area
- Conflicts between urban growth and preservation of archeological, geological, historical resources and maintenance of productive farmland
- Subsidence ranging from 3 to 5 feet due to groundwater overdraft

Flooding

- Serious flooding in Tucson flood plains
- Summer flash floods in Indian communities
- Large flood damages to irrigated croplands

Institutional

- Arizona groundwater law inadequate for managing groundwater overdraft
- Federal, Indian, State and private water rights unclearly identified
- Lack of a common State-Federal-Indian relative priority of use system

Problem Area 1502-3: Virgin Valley Area (Utah, Arizona, Nevada)
ASR 1502, Category B

- The Colorado River Basin Salinity Control studies of the Bureau of Reclamation and the Department of Agriculture are not being implemented as quickly as desired
-

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE GREAT BASIN REGION (16)

Problem Area 1: Bear River Area (Utah)
ASR 1601, Category A

Water

- Inadequate streamflow and lack of surface storage facilities
 - Inadequate late season water for irrigation and marshland management
 - Conflicts over operating criteria for Bear Lake
-

Problem Area 2: Weber River Area (Utah)
ASR 1601, Category A

Water

- Water quality degradation due to increasing population

Related Land

- Land use conflicts between development, urban growth and maintenance of high value agricultural land

Flooding

- Flooding in Davis and Weber Counties
-

Problem Area 3: Jordan River Area (Utah)
ASR 1601, Category A

Water

- Inadequate municipal water supply for projected growth until completion

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE GREAT BASIN REGION (16)

of the Central Utah Project

- Water quality degradation due to population increases

Flooding

- Potential for flooding in the area is high

Institutional

- Full development of the ground water hindered by institutional and legal constraints

Problem Area 9: Walker River Basin (Nevada)
ASR 1604, Category A

Water

- Inadequate water supplies and declining water quality for multiple uses
- Declining Walker Lake levels and increasing salinity due to upstream depletions and poor quality return flows on the Walker River
- Declining groundwater quality and quantity

Related Land

- Drainage, erosion and phreatophyte removal affecting cropland production, recreation, fishing and hunting

Problem Area 10: Carson-Truckee River Basins Area (Nevada)
ASR 1604, Category A

Water

- Inadequate surface water supplies to meet all uses
- Pyramid Lake level fluctuations due to natural and man-made causes
- Increasing chemical content of return flows
- Declining ground water levels
- Conflicts between removal versus maintenance of phreatophytes

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE GREAT BASIN REGION (16)

Related Land

- Drainage, erosion and phreatophyte removal affecting cropland production, recreation, fishing, and hunting
-

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE PACIFIC NORTHWEST REGION (17)

Problem Area 1: Oregon Coastal
ASR 170-, Category A

Water

- Water supplies insufficient in the summer when demand is high
- Fish and wildlife habitat, within and adjacent to estuaries, adversely affected by urban, industrial, agricultural and forestry activities
- Coastal developments adversely affecting unique resources (beaches, dunes, lakes, scenic, and wilderness areas, and wildlife habitat)
- Certain estuaries are affected by water quality degradation
- Dredging or spoiling for navigation damaged fishery and wildlife habitat and degrades estuarine water quality

Flooding

- Annual over-bank flooding on the lower reaches of most coastal streams
-

Problem Area 2: Puget Sound Area (Washington)
ASR 170-, Category A

Water

- Maintenance of scenic and recreational values in the area

Institutional

- Unquantified Federal and Indian reserved water rights
- Jurisdictional conflicts over water and related lands constitute a major problem

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS
IN THE PACIFIC NORTHWEST REGION (17)

Problem Area 3: Snake River Area (Idaho, Oregon)
ASR 170-, Category A

Water

- Conflict between water supply development and preservation
- Out-of-state diversion of water
- Downstream river management
- Water quality problem in Brownlee reservoir
- Potential conflict between offstream consumptive and instream uses
- Conflict between hydroelectric power generation and other instream uses

Institutional

- Reservation doctrine related to federal lands
 - Lack of federal water policy
 - Differences among national-regional-state growth policy
-

Problem Area 4: Columbia River Area (Idaho, Oregon)
ASR 170-, Category A

Water

- Conflicts between upstream irrigation consumption and downstream hydroelectric power generation
 - Increased power demand for irrigation pumping
 - Conflicts between hydroelectric power generation and other instream uses caused by instream flow requirements for multiple uses
 - Increasing enrichment of river water by development, heat discharges, and impoundments degrading water quality
-

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE CALIFORNIA REGION (18)

Problem Area 021: Sacramento Valley (California)
ASR 1802, Category A

Water

- Withdrawals for authorized projects will result in inadequate streamflow levels in the Lower American River
- Declining river salmon and steelhead runs

Related Land

- Diminishing riparian habitats
- Navigation hazards
- Seepage
- Banks erosion from unleveed reaches

Flooding

- Continued periodic flooding despite substantial investments in structural facilities
-

Problem Area 031: San Joaquin Valley (California)
ASR 1803, Category A

Water

- Lack of sufficient water supply
- Long term groundwater overdraft
- Surface water quality degradation

Related Land

- Need for salt management (drainage)
- Fish and wildlife habitat declining from water quantity and quality factors and land use changes

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE CALIFORNIA REGION (18)

Flooding

- Rural, urban and agricultural flood plain developments causing increased flood damages

Financial

- Repayment of reimbursable costs of valley-wide drainage beyond farmers' capability to pay
-

Problem Area 051: Salinas, Pajaro and Carmel Valleys (California)
ASR 1805, Category A

Water

- Groundwater overdraft causing intrusion of sea water into aquifers near coast
- Groundwater being degraded by agricultural return water

Flooding

- Flash flooding from steep-sloped lands damaging agricultural and urban lands
 - Steep slopes cause severe erosion and sediment deposition
-

Problem Area 023: Sacramento-San Joaquin Delta (California)
ASR 1804, Category B

Water

- Transport of large volumes of exported water through the delta causing water quality changes, improvements and other related environmental changes

Flooding

- Inundation threat to island agriculture, urban areas and scattered

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE CALIFORNIA REGION (18)

natural gas wells caused by boat wake induced levee erosion, land subsidence near levees and substandard levee construction

Institutional

- Conflicts and litigation dealing with delineation of water rights
- Lack of adequate financing and repayment plan involving Federal, State and local interests

Problem Area 041: Santa Clara County (California)
ASR 1804, Category B

Water

- Overdraft of groundwater previously mitigated by surface imports and will become severe again
- Substantial diminishing of fish and aquatic wildlife habitat due to water quality impairment

Related Land

- Inadequate lakeside and streamside recreational facilities

Flooding

- Expanding urban development, reduction in channel capacities and subsidence associated with previous overdrafts near streams and low baylands

Problem Area 042: San Francisco Bay (California)
ASR 1804, Category B

Water

- Severe decline of the bay's water quality due to inflow of inadequately treated point and non-point wastes causing closure of shellfish beds, fish kills and other related impacts, especially in the shallow extremities of the bay with poor dispersion characteristics

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE CALIFORNIA REGION (18)

Related Land

- Severe conflicts between urban development and open space--wetland habitat preservation interests

Institutional

- Lack of coordinated planning by Federal, State and local agencies to develop control measures and management practices

Problem Area 061: Santa Ana River Basin (California)
ASR 1806, Category B

Water

- Severe overdraft and degradation of groundwater due to natural percolation of nutrients and dissolved solids from sewage and agricultural return flows
- Poor circulation, substantial reduction in size and productivity of saltwater marshes due to development related dredging, reclamation, pollution, and siltation

Flooding

- Substantial decrease in the degree of flood protection being provided by existing Prado Dam due to increased peak runoff, water course encroachments and reservoir sedimentation caused by burgeoning upstream urban development

Problem Area 062: Colorado River Salinity (California)
ASR 1806, Category B

Water

- Inadequate salinity control measures and increasing withdrawal usage in the Colorado River Basin are causing increasingly severe degradation of water imported to California thereby impairing its usefulness for municipal, industrial and irrigation purposes

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE CALIFORNIA REGION (18)

Problem Area 063: Coastal Lagoons Preservation (California)
ASR 1806, Category B

Water

- Degradation of coastal lagoons habitat due to land development and virtual elimination of fresh water inflows; causes include urban development pressures, related ground and surface water withdrawals and reduced return flow contributions due to improved waste treatment practices

Related Land

- Disposal of inadequately treated organic sludge into lagoons accelerating eutrophication
 - Urban development induced sedimentation reducing depth size and water quality of lagoons and other wetlands
-

Problem Area 064: Salton Sea Salinity (California)
ASR 1806, Category B

Water

- Increasing salinity, rising water surface levels, and incoming mineral nutrients caused by agricultural drainage, seepage, leaching and control waters are adversely affecting fish and aquatic wildlife, discouraging recreation uses and impairing urban and manufacturing related shoreline developments

Institutional

- Federal attitude has been that remedial action and funding is a local concern and the State feels that the federal government has a responsibility because of the interstate and international aspects and involved federal projects

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE CALIFORNIA REGION (18)

Problem Area 065: Santa Clara River Basin (California)
ASR 1806, Category B

Water

- Severe overdraft of ground water plus degradation of ground water quality due to sea water intrusion and percolation of dissolved solids from irrigation return flows--particularly severe in Oxnard Plains aquifers
 - Inadequate conjunctive management of the available ground and surface water resources to maintain quality of basins water resources
-

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE ALASKA REGION (19)

Problem Area 1: Tanana Area (Alaska)
ASR 1901, Category A

Water

- Inadequate water supply systems for communities, industries and agriculture
- Inadequate sewage and solid waste systems
- Agriculture and the oil industry pollution problems

Related Land

- Erosion and sedimentation from road building, logging and agriculture practices

Flooding

- Historically flood prone due to spring breakup and high runoff through early fall

Institutional

- Lack of adequate protection of instream flows for fish and wildlife habitat
-

Problem Area 2: Bristol Bay (Alaska)
ASR 1901, Category A

Water

- Lack of community water and sewer facilities for majority of residences
- Oil exploration and development placing demands on area's water resources and threatening salt and fresh water habitats and wetlands
- More roads, increased sea transportation and oil pipelines threaten fresh and estuarine waters and fish and wildlife habitats
- Water quality degradation due to future large scale metals mining

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE ALASKA REGION (19)

- threatens salmon and trout fisheries
 - Limited public access to water margins and shoreline of Native Corporation owned and leased lands
 - Inadequate harbor and navigational facilities
-

Problem Area 3: Arctic Area (Alaska)
ASR 1901, Category A

Water

- Formation of ice on rivers and drainage routes affecting transportation and damaging public lands
- No substantial ground water in Arctic regions
- Conflicts between increased use of surface water for petroleum production and maintenance of fresh water fish production and related habitat
- Difficulties in treating arctic waste water causing instream and ground water pollution
- Declining fish populations near population centers due to declining water levels and toxic substances

Related Land

- Development induced severe erosion
- Severe coastal erosion at selected exposed sites along the Arctic Ocean and Chukchi Sea

Flooding

- Annual flooding along coastal plain streams, the Sagavanirktok, Colville and Mead Rivers, and the Arctic and Chukchi seacoasts
- Coastal flooding is a threat to the security of shipping facilities

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE ALASKA REGION (19)

Problem Area 5: Cook Inlet Area (Alaska)
ASR 1901, Category A

Water

- Inadequate water supply and waste disposal facilities
- Severe inadequate water supplies for communities on Kenai Peninsula
- Heavy use pressure and overcrowding of water-based recreational facilities and increased harvest of fish and wildlife for waters accessible by road
- Competition between urban, agriculture, and instream uses, especially with relocation of capitol to Willow in the Matanuska-Susitna Valley
- Oil and gas developments in Lower Cook Inlet threatening important fishing grounds
- Development of Beluga coal degrading fresh water habitats for fish and waterfowl
- Development of Susitna hydroelectric project altering natural ecosystems

Related Land

- Urban encroachment on wetlands, farm lands, flood plains and municipal watershed lands
 - Projected growth requiring expansion of existing Kenai Peninsula port and harbor facilities within Cook Inlet
-

Problem Area 7: Gulf of Alaska Area (Alaska)
ASR 1901, Category A

Water

- Inadequate water supplies for municipalities, fish processing, placer mining, livestock and minimum instream flows
- Lack of data on location and quantity of potable ground water aquifers and water supplies, including snow packs
- Surface water with high sediment loads, flood hazards, saline groundwater and potential pollution from marine traffic and offshore oil production
- Inadequate solid and liquid waste disposal systems

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE ALASKA REGION (19)

- Potential degradation of water from placer mining, sand and gravel extraction, forestry, agricultural land use, and from drilling rigs and mine processing plants
- Conflicts between the fisheries and petroleum industries, between recreation and commercial fishing, between logging and fisheries/hunting/recreation activities

Related Land

- Flooding, erosion and sedimentation hazards
- Urban encroachment in wetlands, farm lands, flood plains, sensitive geologic/biological areas and municipal watershed lands

Problem Area 8: Kotzebue Sound Area (Alaska)
ASR 1901, Category B

Water

- Groundwater quality degradation due to saline intrusion
- Suspended organic material in surface water
- Inadequate water storage, distribution systems, and sewage disposal systems in half of the communities
- Inadequate water supplies restricting industrial growth in coastal communities
- Shallow water inhibiting needed deep water port facilities and related industrial/economic development
- Potential water quality degradation from oil and gas or mining operations adversely affecting aquatic habitat
- Competitive water and land use by mineral and energy developers and by subsistence and recreation users restricting economic growth

Flooding

- Periodic storms causing coastal flooding, property damage and beach erosion

Financial

- Lack of funds for operation and maintenance of community water and sewage systems adversely affecting future community health and economic development

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE ALASKA REGION (19)

Problem Area 9: Norton Sound (Alaska)
ASR 1901, Category B

Water

- Groundwater quality degradation due to saline intrusion in coastal communities
- Inadequate water supply and sewage systems in majority of communities
- Drilling rigs, oil production facilities and mineral processing plants degrading water quality and adversely affecting aquatic habitat
- Lack of deep water ports restricting industrial and economic development
- Conflicts between energy developers and subsistence and recreation users of water and land

Flooding

- Coastal flooding, beach erosion and related property damage

Financial

- Inadequate funds for operation and maintenance of water and sewage systems adversely affect health and restrict growth
-

Problem Area 11: Upper Yukon (Alaska)
ASR 1901, Category B

Water

- Low flows in late winter and early spring due to extensive winter river freezing
- Groundwaters with high concentrations of natural dissolved solids

Flooding

- Ice-jam flooding annually in Fort Yukon and developments along the Yukon River
-

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE ALASKA REGION (19)

Problem Area 12: Central Yukon (Alaska)
ASR 1901, Category B

Water

- Limited water available for domestic purposes and summer mining activities in locations removed from major rivers because permafrost restricts available ground water. Sources often badly polluted from misdirected waste
- Deep wells contain low PH, hence highly corrosive water
- Many shallow wells have objectionable amounts of iron and dissolved solids

Flooding

- Spring flooding is a hazard to life, property and water quality. Contamination of local surface waters by spring flooding of land on which human or other wastes have been deposited during the winter.
-

Problem Area 14: Lower Yukon (Alaska)
ASR 1901, Category B

Water

- Inadequate water supplies due to saline groundwater, or high nitrate, sodium bicarbonate or other chemical constituents
- Poor quality water for coastal fish processing plants
- Inadequate or nonexistent water distribution and sewage collection and treatment facilities in some communities
- Wastes from drilling rigs and placer mines degrading surface water quality and fishery habitat
- Conflict between placer mines and instream salmon uses in late summer
- Organic materials in the effluent from placer mines depressing dissolved oxygen in receiving streams

Related Land

- Conflicts between mineral and energy development interests and other users of the land
- Increased siltation and sedimentation due to forest industries,

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE ALASKA REGION (19)

- agriculture, placer mines and gravel mines
- Degradation of water quality in streams, lakes, or wetlands crossed by or adjacent to roadway, utility, and pipeline developments, especially with regard to the great waterfowl habitats of the Lower Yukon delta
- Development of the minerals, energy and fisheries industries hampered by inadequate port facilities and protected anchorages along the coast and in larger rivers

Flooding

- Flooding in smaller communities

Problem Area 15: Kuskokwim Bay Area (Alaska)
ASR 1901, Category B

Water

- Poor ground water quality for numerous villages due to saltwater intrusion and high nitrate concentrations
- Absence of suitable water for domestic use and for fish processing preventing full development of the fisheries resource
- Surface water, wetland, estuarine and groundwater quality degradation due to development of the mineral and petroleum resources
- Increased sedimentation and pollution from accidental spills from road building and exploratory drilling affecting domestic supplies and fish and wildlife water habitats
- Untreated sewage polluting surface and groundwater resources near many communities

Flooding

- Spring flooding along the Kuskokwim River
- Lack of identification of flood prone land hinders land and flood management activities

Financial

- Lack of funds for the operation and maintenance of several village water supply and sewage treatment facilities due to lack of a sufficient economic base
-

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE ALASKA REGION (19)

Problem Area 16: Aleutian Area (Alaska)
ASR 1901, Category B

Water

- Water for domestic and fisheries industry use limited by small basins that are costly to develop
- Inadequate water supply system in many communities
- Inadequate waste disposal creating many unsanitary conditions
- Threatened pollution of abundant valuable fin, shellfish, sea mammal, and waterfowl resources due to oil development activities

Related Land

- Stream sedimentation due to overgrazing of sheep and cattle on some of the island
 - Inter-island water transportation impaired by inadequate port facilities, poorly protected anchorages and insufficient hydrographic data
-

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE HAWAII REGION (20)

Problem Area 2001-2: Hawaii Island Hydro Area II (Hawaii)
ASR 2001, Category B

Water

- Instream recreational and environmental values remain unprotected because of lack of a State minimum stream flow regulation
- Military use of Pohakuloa Camp area is limited by lack of surface water
- Water quality degradation by municipal wastes affects larval fishing areas and bait fish habitat
- Coastal waters from Ookala to Hilo Bay do not meet water quality standards due to sediments, domestic sewage, thermal and industrial water discharges
- Degradation of water quality in parts of Hilo Bay create hazardous conditions for water borne organisms
- Effects of thermal discharge into Hilo Bay are not fully known
- Depth of channel, tidal surges and tsunami hazards affect utility of Hilo Harbor
- Recreational boating is affected by channel depth and tidal surges
- Water quality degradation from municipal, thermal and mill processing water affect larval fishing areas, bait fish habitat, marine and estuarine ecosystems

Related Land

- 1,000 feet of critical beach erosion at Hilo Bay
- Hilo Harbor requires dredging
- Sedimentation and discharge of bagasse, sugar and soil from mill operations along Hamakua coast have resulted in burial of marine life, reduced coral growth and suffocation of other organisms due to accumulation of cane trash and oxygen demand
- Harbor dredging can affect marine and estuarine ecosystems and fish and wildlife habitats
- Ohio forest decline affects quantity and quality of runoff available for municipal use
- Access to smaller inland hunting areas is limited because of stream diversions
- Competing use in the Mauna Kea area include hunting, preservation of historical, archeological and geological resources and natural and scenic areas, hiking, camping and snow skiing
- Loss of the Wailuku watershed from lava flows would be disastrous to Hilo by affecting water supplies

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE HAWAII REGION (20)

Flooding

- Flooding affects rural and domestic uses of land and surface water supply

Institutional

- Ownership of surplus surface water and exporting water from the basin of origin is pending in court
- State programs for dredging and filling of wetlands, coastal zone management and protection of endangered species and habitats must be considered

Financial

- Financing programs for State, County and private systems to meet requirements of Federal drinking water quality standards

Problem Area 2006-1: Oahu Island Hydro Area I (Hawaii)
ASR 2003, Category B

Water

- Treatment would be required for the use of the Kahana Valley and Punaluu Valley developable water
- Kahana Bay is classified as a water quality segment caused by non-point source pollution

Related Land

- An inadequate drainage system causes ponded water in residential area of Kaaawa
- There is 24,000 feet of critical beach erosion
- Sedimentation from agricultural practices, storm runoff and urbanization clogs stream channels and threatens the environment
- Potential agriculture acreages could be lost with increasing population and pressure to zone more urban land
- Urbanization and rapidly increasing population leads to conversion of wildlife habitat areas, agricultural land to urban use and penetration into the forest land
- Wetlands are being degraded by urbanization, pollution, and siltation
- The lowlands of Kahuku are a potential urban area. They serve as a

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE HAWAII REGION (20)

storm water ponding area and will require draining and filling before development. This conflicts with their natural function in flood control and habitat area.

Flooding

- Flooding caused by limited capacities of streams, runoff and overflow from drainage ditches and sand dune formation at stream mouths which prevent discharge to the ocean
- Tsunami inundation on the east side

Institutional

- Ownership of surplus surface water and exporting from the basin of origin are pending in court
- Flood plain zoning and establishment of encroachment zones along streams are needed
- Shoreline development controls to prevent habitat and scenic degradation

Financial

- Zoning and/or structural flood control measure cooperative funding
- Beach erosion control measures and land treatment funding
- Acquisition of endangered water bird habitat financing

Problem Area 2006-2: Oahu Island Hydro Area II (Hawaii)
ASR 2003, Category B

Water

- The perennial streams are fed by drainage from dike confined water bodies. Further development of dike zone sources will reduce stream flow
- Surface water is withdrawn for irrigation and transport out of the area. There is no regulation for minimum streamflow to prevent withdrawal of all flow and endangering habitats
- Kaneohe Bay is classified as a water quality segment due to domestic sewage discharges to the bay
- Excessive runoff and sediment to Kaneohe Bay due to urbanization, improper grading and planting procedures and improper flood control management

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE HAWAII REGION (20)

- Water quality degradation has caused permanent destruction of marine and estuarine ecosystems and reef habitat
- Groundwater development has been by means of tunnels driven into dike compartments. Further dike development will reduce water quantities
- The total potential of groundwater development is difficult to assess because of the inter-relationship of streamflow and groundwater discharge

Related Land

- There are 13,000 feet of critical beach erosion
- Sediment from urbanization of Kaneohe watershed, improper grading and replanting procedures and improper flood control management practices have led to the permanent destruction of marine and estuarine ecosystems and reef habitat and degradation of a natural and scenic site
- There are three streams recommended for fresh water fishing development-- Waiahole, Waihee and Kamooalii. The conflict is export from the watersheds for cane irrigation.
- Municipal-domestic uses of land are contributing to the degradation and permanent destruction of marine and estuarine ecosystems, reef habitats, ancient fishponds and scenic values
- Lack of non-consumptive use opportunity severely limits public support in endangered species research and conservation programs. Improvement of public access to wetland habitat could help.

Flooding

- Flood problems in the Waikane, Kahaluu, Kaneohe, Kawaiinui and Waimanalo watersheds are due to shallow stream channels which are overgrown or have clogged outlets

Institutional

- Ownership of surplus surface waters is yet to be decided in court
- State programs for the protection of environmental resources are inadequate or not implemented

Financial

- Structural measures, zoning and acquisition of flood plains will require cooperative funding
- Acquisition to insure protection of estuaries, wetlands, ancient fishponds and wildlife habitat

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE HAWAII REGION (20)

Problem Area 2006-3: Oahu Island Hydro Area III (Hawaii)
 ASR 2003, Category B

Water

- Extensive treatment of surface sources for development will be necessary
- Stream water is bacteriologically unsafe for water contact recreation
- Mamala Bay is classified as a water quality segment due to discharges of power plant thermal, thermal washwater from canning plants and domestic sewage. These discharges have resulted in sedimentation, algal infestation and shifts in species composition. Adequate baseline data is needed.
- Water needs in the area will increase

Related Land

- 55 percent of the State's population live in this area. It is the location of Honolulu, the capital, Federal and State agencies, and Waikiki Beach.
- There are 20,000 feet of critical beach erosion
- Major causes of erosion are urbanization and inadequate controls on regrading and replanting
- Penetration into forest areas and watersheds can result in more erosion and sedimentation, less area for groundwater recharge and damage to wildlife habitats
- Increased inland recreation opportunities could result in opening of restricted watershed areas and necessity of treating water supplies

Flooding

- High flood losses due to encroachment on flood plains, stream banks, and tsunami zones
- Major causes of flooding are limited capacities of streams and channels and clogging of streams and channels with debris

Institutional

- Ownership of surplus surface water is yet to be decided in court
- Water demand will exceed developed supply before 2000

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE HAWAII REGION (20)

Problem Area 2006-4: Oahu Island Hydro Area IV (Hawaii)
ASR 2003, Category B

Water

- The potential surface sources are not bacteriologically safe and would require extensive treatment
- Pearl Harbor has been designated as a water quality segment. Point source discharges include municipal sewage, thermal water and industrial wash water. Non-point source discharges include unconfined irrigation tailwater carrying silt, chemical fertilizers and pesticides, urban storm runoff, and construction sites.
- The pollution at Pearl Harbor has caused permanent destruction of marine and estuarine organisms and habitat
- Excessive pumping rates at wells further inland have caused salt water intrusion of wells closer to the coastal zone
- Much of the domestic use in the area is for military families
- Irrigation return water and enrichment of nitrate from fertilizers can be found in some Pearl Harbor wells

Related Land

- There are 4,000 feet of critical beach erosion
- Silt from unconfined irrigation tailwaters, stream runoff and urban construction have damaged or destroyed marine and estuarine ecosystems and habitat areas
- Changing land use from agricultural to urban and industrial affects groundwater infiltration and water use patterns
- Pearl Harbor could serve as a major recreation center. However there is a conflict of military use and civilian use.

Flooding

- The major flood problem is Waiawa Stream

Institutional

- Ownership of surplus surface waters and legality of transferring water out of the watershed of origin is pending in court
- Cooperative programs for the use of Pearl Harbor as a public recreational area are needed

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE HAWAII REGION (20)

- Pumpage and water use of the Pearl Harbor groundwater aquifer. Since 1968 pumpage has exceeded recharge
- Many questions of groundwater ownership and use rights that are on relatively unstable legal grounds
- Protection of underground water supplies required by the Federal Drinking Water Quality Act raise new institutional issues for management of the Pearl Harbor aquifer
- State and county efforts to acquire wetland endangered species habitat are needed

Financial

- Two possibilities for increasing domestic water supply are an exchange of high quality water presently used for irrigation for lower quality but suitable water or treated sewage effluent. Irrigation interests would require exchange water at same elevation, requiring public financing for pumping.

Problem Area 2006-5: Oahu Island Hydro Area V (Hawaii)
ASR 2003, Category B

Water

- Domestic sewage, industrial process water and thermal washwater has resulted in sedimentation, algal infestation and shifts in species composition

Related Land

- There are 6,000 feet of critical beach erosion
- Sediments can damage marine ecosystems and habitat areas. Baseline data is inadequate.

Flooding

- Waianae and Nanakuli are subject to tsunami

Institutional

- Ownership of surplus surface water and exporting water from the basin of origin is pending in court
- Zoning of yet undeveloped flood plains to reduce future flood damage

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE HAWAII REGION (20)

- State and local programs to regulate removal of species by collectors may be inadequate
- Cooperative Federal and State programs to secure multiple use of military lands

Financial

- Public rights of way to beaches may need to be acquired by the state

Problem Area 2006-6: Oahu Island Hydro Area VI (Hawaii)
ASR 2003, Category B

Water

- Streams draining the Koolau Range are dry in their lower reaches because of upstream diversions
- The largest reservoir in the state is located in this area with no minimum draw down regulation. There have been fish kills of stocked fish.
- Kaiaka Bay has been classified as a water quality segment due to sewage discharge, thermal and industrial discharge, erosion, high coliform countss and cesspool leakage
- Increased development of high level water will affect basal water in Pearl Harbor

Related Land

- There are 13,000 feet of critical beach erosion
- Sediment discolors coastal waters with possible damage to environmental systems
- Pressure to rezone agricultural land to urban use will increase
- Military use of land for maneuvers has resulted in erosion, fire, localized road scars, heavy vehicle destruction, habitat destruction, and limited use opportunity

Flooding

- The Waialua-Wahiawa watershed has suffered frequent flooding, lives lost and property and crop damaged

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE HAWAII REGION (20)

- Coastal areas are subject to tsunami inundation

Institutional

- Ownership of surplus surface water and exporting water from the basin of origin is pending in court
- Cooperative management of military lands is needed to secure multiple use and protect habitat. Land use controls on military land are needed.
- State minimum streamflow regulation and reservoir draw-down regulation are needed

Financial

- Cooperative financing of Waialua-Haleiwa flood problems will be necessary if the project is authorized

Problem Area 2007-3: Kauai Island Hydro Area III (Hawaii)
ASR 2004, Category B

Water

- Port Allen is classified as a water quality segment due to raw sewage, oil, silt, and sediment
- Potential of developing groundwater is large but reduces aquifer discharge to streams
- Diversions for irrigation dry up streams resulting in environmental damage

Related Land

- Drainage outlets to the ocean area major problem in Poipu
- There are 3,000 feet of critical beach erosion
- Sediment from runoff and agricultural tailwaters is a threat to environmental systems
- Hanapepe Salt Ponds, an endangered water bird habitat, and the sea bird habitat at Makahuena Point are threatened by urbanization

Flooding

- Lowlands are prone to flooding from overland runoff, damaging residences, crops and livestock
- Poipu has flood problems

SYNOPTIC DESCRIPTION OF THE MAJOR PROBLEMS IN THE HAWAII REGION (20)

Institutional

- Ownership of surplus surface water and exporting water from the basin of origin is pending in court
 - Implementation of State environmental programs
-

Problem Area 2007-5: Kauai Island (Hawaii)
ASR 2004, Category B

Water

- Kekaha shoreline pollution due to silting, inshore turbidity and agricultural tailwater, threatens reef destruction, loss of fisheries resources, and use opportunity
- Groundwater quantity is limited by saline intrusion
- Water withdrawn from the coastal plain is not suitable for domestic use

Related Land

- There are 8,000 feet of critical beach erosion at Kekaha and at Barking Sands
- Between Kekaha and Waimea there is inshore turbidity and silting from agricultural tailwaters, with a threat to marine environment
- Access to Barking Sands is limited by military activity

Flooding

- Critical flooding in Kekaha where runoff through canefields and overflowing irrigation ditches flow into Kekaha town
- The entire shoreline is a tsunami inundation area

Institutional

- Ownership of surplus surface water and exporting water from the basin of origin is pending in court
- Institutional arrangements to insure integrity of groundwater aquifer is needed

APPENDIX C

1975 NATIONAL ASSESSMENT REGIONAL AND STUDY DIRECTORS

Water Resources Region	Sponsoring Agency	Study Director Address and Telephone
NEW ENGLAND (01)	New England River Basins Commission	Ms. Jane Carlson New England River Basins Commission 53 State Street Boston, Massachusetts 02108 (FTS) 617-223-1131
MID-ATLANTIC (02)	North Atlantic Division Corps of Engineers	Mr. Robert Meikeljohn North Atlantic Division Corps of Engineers 90 Church Street New York, New York 10007 (FTS) 212-264-7485
SOUTH ATLANTIC- GULF (03)	Southeast Basins Inter-Agency Committee	Mr. Douglas Belcher South Atlantic Division Corps of Engineers 510 Title Building 30 Pryor Street Atlanta, Georgia 30303 (FTS) 404-242-4327 (COM) 404-221-4327
GREAT LAKES (04)	Great Lakes Basin Commission	Mr. Leonard Crook Great Lakes Basin Commission 3475 Plymouth Road Ann Arbor, Michigan 48106 (FTS) 313-374-5431

Water Resources Region	Sponsoring Agency	Study Director Address and Telephone
OHIO (05)	Ohio River Basin Commission	Mr. Steve Thrasher Ohio River Basin Commission 36 East 4th Street Cincinnati, Ohio 45202 (FTS) 513-684-3831
TENNESSEE (06)	Tennessee Valley Authority	Mr. Jack Davis Tennessee Valley Authority 100 Liberty Bldg. 415 Walnut Street Knoxville, Tennessee 37902 (FTS) 615-852-4451
UPPER MISSISSIPPI (07) AND SOURIS- RED-RAINY (09)	Upper Mississippi River Basin Commission	Mr. Jeff Featherstone Upper Mississippi River Basin Commission 510 Federal Office Building Fort Snelling win Cities, Minnesota 55111 (FTS) 612-725-4690
LOWER MISSISSIPPI (08)	Mississippi River Commission U.S. Army Corps of Engineers	Mr. Richard Stuart Mississippi River Commission P.O. Box 80 Vicksburg, Mississippi 39180
MISSOURI (10)	Missouri River Basin Commission	Mr. Carroll M. Hamon Missouri River Basin Commission Suite 403 10050 Regency Circle Omaha, Nebraska 68114 (FTS) 402-864-9351

Water Resources Region	Sponsoring Agency	Study Director Address and Telephone
ARKANSAS-WHITE-RED (11)	Arkansas-White-Red Basins Inter-Agency Committee	Mr. Kenneth Schroeder Bureau of Reclamation Department of the Interior P.O. Box 252 National Building Albuquerque, New Mexico 87103 (FTS) 505-474-2184
TEXAS-GULF (12)	Texas Department of Water Resources	Mr. Arthur Simkins Economist Department of Water Resources P.O. Box 13087 Austin, Texas 78711 (COM) 512-475-3787
RIO GRANDE (13)	Bureau of Reclamation U.S. Department of the Interior	Mr. Kenneth Schroeder Bureau of Reclamation Department of the Interior P.O. Box 252 National Building Albuquerque, New Mexico 87103 (FTS) 505-474-2184
UPPER COLORADO (14)	Bureau of Reclamation U.S. Department of the Interior	Mr. Ival Goslin Upper Colorado River Commission 355 South Fourth East Street Salt Lake City, Utah 84111 (COM) 801-531-1150

Water Resources Region	Sponsoring Agency	Study Director Address and Telephone
LOWER COLORADO (15)	Bureau of Reclamation U.S. Department of the Interior	Mr. Dean F. Johanson Bureau of Reclamation Department of the Interior P.O. Box 427 Boulder City, Nevada 80005 (FTS) 702-598-7592
GREAT BASIN (16)	State of Nevada Division of Water Resources and State of Utah Division of Water Resources	Mr. Vic Hill Division of Water Resources 201 South Fall Street Carson City, Nevada 89701 (COM) 702-885-4380 and Mr. Barry Saunders Division of Water Resources 435 State Capitol Salt Lake City, Utah 84114 (COM) 801-533-5401
PACIFIC NORTH- WEST (17)	Pacific Northwest River Basins Commission	Mr. William Delay Pacific Northwest River Basins Commission 1 Columbia River P.O. Box 908 Vancouver, Washington 98660 (FTS) 206-422-9307
CALIFORNIA (18)	Department of Water Resources	Mr. Jake Holderman Department of Water Resources P.O. Box 388 Sacramento, California 95882 (FTS) 916-465-7239

Water Resources Region	Sponsoring Agency	Study Director Address and Telephone
ALASKA (19)	Alaska Water Study Committee	Mr. Jim Cheatham Alaska Power Administration P.O. Box 50 Juneau, Alaska 99802 via Seattle (FTS) 206-399-0150 907-586-7405
HAWAII (20)	Department of Land and Natural Resources	Mr. Walter O. Watson, Jr. Assistant Manager Division of Water & Land Development Department of Land and Natural Resources P. O. Box 373 Honolulu, Hawaii 96809 via San Francisco (FTS) 415-556-0220 808-548-7619
CARIBBEAN (21)	Department of Natural Resources	Mr. Gabriel del Toro Assistant Secretary for Planning Department of Natural Resources Commonwealth of Puerto Rico P.O. Box 5887 Puerta de Tierra, Puerto Rico 00906 (COM) 809-724-8774, Ext. 218

APPENDIX D
SELECTED BIBLIOGRAPHY

Books

Steel, Ernest W. Water Supply and Sewerage. 4th ed. New York: McGraw-Hill Book Company, Inc., 1960.

Journals/Magazines

Andrus, Cecil D. "Energy, Water, Environment--A Top Official Looks Ahead; Interview." U.S. News and World Report, 27 June 1977, pp. 62-64.

"Exxon advertisement." U.S. News and World Report, 27 March 1978, p. 30.

Harte, John and El-Gasseir. "Energy and Water." Science 199 (10 February 1978): 627.

Menzies, Hugh D. "Why Sun is Educating Itself Out of Oil." Fortune, 27 February 1978, pp. 42-44.

"The Modernization of a Small Hydro Plant." Civil Engineering, September 1977, p. 60.

"Small Hydro-Electric Units--Where to Find Them." Civil Engineering, September 1977, p. 87.

Spencer, Glenn W. "The Fight to Keep Houston from Sinking." Civil Engineering, September 1977, p. 70.

Stroeh, J. Dietrich. "What Do You Do When You're Out of Water?" American City and County, December 1977, p. 49.

"What Makes Mobil Run?" Business Week, 13 January 1977, p. 30.

"Wyoming Grassland Transformed into Coal Mining Center." Civil Engineering, September 1977, p. 54.

Newspapers

Hornblower, Margot. "Carter Tries to Stem Hill Flow of Largess into River Projects." Washington Post, 19 December 1977, sec. A, p. 4.

_____. "Fight for Water." Washington Post, 6 February 1978, sec. A, pp. 1, 10, 11.

Newport News (Virginia) Daily Press. 2 April 1978, Sunday supplement.

Ognibene, Peter J. "Western Water: Ignoring the Problem." Washington Post, 28 January 1978, sec. A, p. 17.

O'Toole, Thomas. "Forecasters Don't See an Energy Crisis, Right? Wrong." Washington Post, 15 January 1978, sec. G, p. 3.

Pine, Art. "Energy--'The U.S. Has a National Policy, and It's Working.'" Washington Post, 19 March 1978, sec. E, p. 1.

U.S. Government Documents

U.S., Army Corps of Engineers, Directorate of Civil Works, Institute for Water Resources. Urban Studies Program Evaluation Report, July 1977.

_____. North Atlantic Division. Northeastern United States Water Supply Study, Summary Report, July 1977.

U.S., Department of Interior, Geological Survey. Estimated Use of Water in the United States in 1975. By C. Richard Murray and E. Bodette Reeves. Geological Survey Circular 765, 1977.

U.S., Executive Office of the President. Energy Policy and Planning Office. The National Energy Plan, 29 April 1977.

U.S., Federal Register. Vol. 42, No. 136, 15 July 1977, pp. 36788-36795; Vol. 42, No. 142, 25 July 1977, pp. 37940-37961.

U.S., President, Address to the Nation. "The Energy Problem." Weekly Compilation of Presidential Documents. Vol. 13, No. 17, 25 April 1977, p. 561.

Wiard, William D. Energy Section of the Systems Acquisition Strategy Study. Andrews Air Force Base, Md.: Hq., Air Force Systems Command, October 1977.

U.S. Water Resources Council Studies

U.S. Water Resources Council. Alaska Water Study Committee. Alaska Region Specific Problem Analysis Summary Report, 1975 National Assessment of Water and Related Land Resources. August 1977.

- _____. Alaska Water Study Committee. Alaska Water Assessment, Appendix G of Summary Report. August 1977.
- _____. Arkansas-White-Red Basins Inter-Agency Committee. Technical Memorandum, Activity 3, Phase II, Specific Problem Analysis, 1975 National Assessment, Arkansas-White-Red Region. April 1977.
- _____. Great Lakes Basin Commission. Great Lakes Basin Region Summary Report for the 1975 National Assessment of Water and Related Land Resources. April 1977.
- _____. Great Lakes Basin Commission. Problem Effects, Great Lakes Region, Activity 3, 1975 National Water Assessment. February 1977.
- _____. Memorandum 76-12, 1975 National Assessment--Middle Atlantic Region, Activity Three, Phase II. September 1976.
- _____. Mississippi River Commission. 1975 National Water Assessment, Lower Mississippi Region, Technical Memorandum No. 3, Effects of Not Resolving Problems. April 1977.
- _____. Mississippi River Commission. 1975 National Water Assessment, Lower Mississippi Region, Technical Memorandum No. 4, Specific Problem Analysis Summary Report. November 1977.
- _____. Missouri River Basin Commission. Missouri Region, Specific Problem Analysis Summary Report, 1975 National Assessment of Water and Related Land Resources (Technical Memorandum No. 4). August 1977.
- _____. Missouri River Basin Commission. Present and Future Uses and Associated Problems and Issues, Technical Memorandum No. 2, 1975 National Water Assessment. August 1976.
- _____. Missouri River Basin Commission. Potential Study Areas in the Missouri River Basin, Technical Memorandum No. 3, 1975 National Water Assessment. December 1976.
- _____. Nationwide Analysis Summary. Preliminary Draft. April 1977.
- _____. New England River Basins Commission. 1975 Assessment of Water and Related Land Resources, The Effects of Not Resolving New England's Resource Problems, Technical Memorandum 3, Part 1, August 1977.

- _____. New England River Basins Commission. 1975 Assessment of Water and Related Land Resources, Federal and State Programs which Relate to Severe Resource Problems in New England, Technical Memorandum 3, Part 2. August 1977.
- _____. 1975 Water Assessment, Specific Problem Analysis, Upper Colorado Region, Technical Memorandum No. 3, Problem Effects. March 1977.
- _____. Ohio River Basin Commission. Technical Memorandum III, Ohio River Basin Commission Participation, Activity 3, Phase II, 1975 National Assessment. 21 September 1977.
- _____. Pacific Northwest River Basins Commission. Pacific Northwest--Region 17, 1975 Assessment of Water and Related Land Resources, Technical Memorandum, Activity 3, Phase II, Specific Problem Analysis. August 1977.
- _____. Preliminary Water Resources Problem Statements. 1977 National Conference on Water, May 23-25, 1977.
- _____. Puerto Rico Department of Natural Resources. 1975 Water Resources Assessment, Technical Memorandum Three, Caribbean Region. 11 February 1977.
- _____. Puerto Rico Department of Natural Resources and U.S. Virgin Island's Planning Office. Caribbean Region, Specific Problem Analysis Summary Report, 1975 National Assessment of Water and Related Land Resources. April 1977.
- _____. Southeast Basins Inter-Agency Committee. 1975 National Water Assessment, Activity Three, Technical Memorandum, South Atlantic--Gulf Water Resources Region. June 1977.
- _____. California Department of Water Resources. California Region, Specific Problem Analysis, Summary Report, 1975 National Assessment of Water and Related Land Resources. July 1977.
- _____. State of California. 1975 National Assessment, California--South Pacific Region 18, Technical Memorandum No. 3, Activity Three--Specific Problem Analysis. April 1977.
- _____. State of Hawaii. Board of Land and Natural Resources. Hawaii Region--20, Specific Problem Analysis Summary Report, 1975 National Assessment of Water and Related Land Resources. 1 December 1977.

- _____. State of Hawaii, Department of Land and Natural Resources. Division of Water and Land Development. 1975 Water Assessment, Activity 3, Phase II, Specific Problem Analysis, Hawaii Region, Technical Memorandum III. 20 July 1977.
- _____. State of Hawaii, Department of Land and Natural Resources, Division of Water and Land Development. Technical Memorandum, Activity 1, Phase II, Specific Problem Analysis for Hawaii Region. 31 October 1975.
- _____. Tennessee Valley Authority. Technical Memorandum 3 for Tennessee Regional Input to Water Resources Council's 1975 National Assessment of Water and Related Lands. August 1977.
- _____. Tennessee Valley Authority. Technical Memorandum 4 for Tennessee Regional Input to Water Resources Council's 1975 National Assessment of Water and Related Lands. November 1977.
- _____. Texas Water Development Board. Technical Memorandum, Problem Effects (Activity 3, Phase II), 1975 National Water Assessment, Texas Gulf Region. July 1977.
- _____. The Nation's Water Resources, The Second National Assessment of the U.S. Water Resources Council, Draft of Appendix A, "Synoptic Descriptions of the Nation's Major Water Problems." October 1977.
- _____. U.S. Bureau of Reclamation. 1975 Water Assessment, Lower Colorado Region--15, Technical Memorandum No. 3, Specific Problem Analysis. April 1977.
- _____. U.S. Bureau of Reclamation. 1975 Water Assessment, Rio Grande Region, Activity 3, Phase II. June 1977.
- _____. U.S. Bureau of Reclamation and Upper Colorado River Commission. Upper Colorado Region, Specific Problem Analysis Summary Report, 1975 National Assessment of Water and Related Land Resources, Technical Memorandum No. 4. July 1977.
- _____. Upper Mississippi River Basin Commission. 1975 National Water Assessment, Specific Problem Analysis, Phase II, Technical Memorandum, Activity Three, Upper Mississippi and Souris-Red-Rainy Regions, Fort Snelling, Twin Cities, Minnesota. April 1977.

_____. Upper Mississippi River Basin Commission. 1975 National Water Assessment, Technical Memorandum, Activity Three, Economic, Environmental, and Social Effects of Not Resolving Selected Problem Areas. Specific Problem Analysis--Phase II, Upper Mississippi and Souris-Red-Rainy Regions. April 1977.

_____. Utah Division of Water Resources. 1975 Water Assessment, Great Basin Region Technical Memorandum No. 3. November 1976.

_____. Utah Division of Water Resources and Nevada Division of Water Resources. 1975 Water Assessment Great Basin Region, Technical Memorandum No. 3, Problem Effects. April 1977.